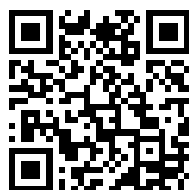

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Mathemat.



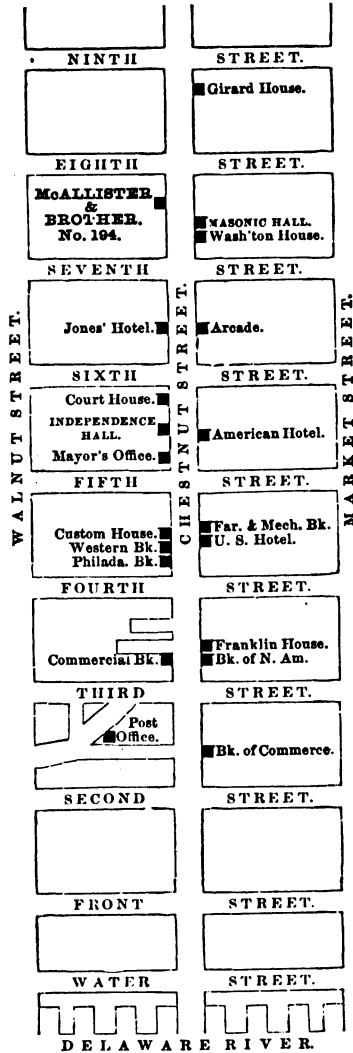
SCIENCE CENTER LIBRARY

1857 January 29
List of Publishers
Philadelphia

M^cALLISTER & BROTHER,

MAP OF CHESTNUT STREET, PHILADELPHIA,

From the Delaware River to Ninth Street.



M^cALLISTER & BROTHER,
No. 194 Chestnut Street, nearly opposite the Masonic Hall.

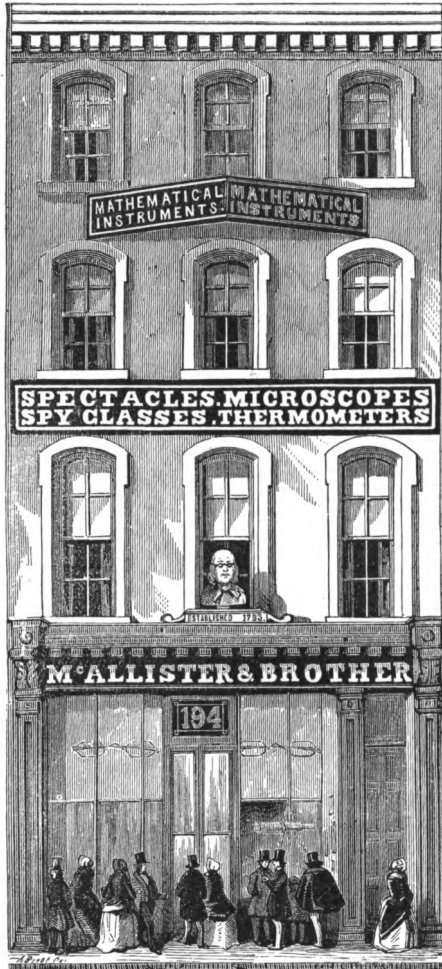
194 CHESTNUT STREET,

Established in 1796.

M^CALLISTER & BROTHER'S CATALOGUE.

(THIRD EDITION.)

This
Catalogue
is
furnished
on
application,
and
sent by mail,
FREE
OF CHARGE,
to all parts
of the
United States
and
Canada.



Persons
ordering
from this
Catalogue
will
oblige us
by saying,
"3d Edition;"
as the
Nos. do not
refer to the
same
articles in
our former
Catalogues.

No. 194 CHESTNUT STREET,

South side, below Eighth Street, nearly opposite the Masonic Hall,

PHILADELPHIA:

1855.

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McALLISTER & BROTHER,

The business of McALLISTER & BROTHER is a continuance and extension of that which was originally commenced by their grandfather, JOHN McALLISTER, Senior, in Market street, about the year 1783, and which, in the year 1796, he established at No. 48 Chestnut street.

JOHN McALLISTER, Senior,.....1783 to 1811,
 JOHN McALLISTER & Son,1811 to 1830,
 JOHN McALLISTER, Jr. & Co.,.....1830 to 1836,
 McALLISTER, (W. Y.) & Co.,.....1836 to 1853,

And since May, 1853,

WILLIAM Y. McALLISTER } under the firm of McALLISTER
 and } & BROTHER.
 THOMAS H. McALLISTER, }

As Inquiries are frequently made by persons desiring information concerning the various Optical, Mathematical, and Philosophical Instruments, which are kept on sale by us; we have, therefore, been induced to prepare a Priced and Illustrated Catalogue; and as we have recently removed from the old stand, No. 48 Chestnut Street, where the business has been carried on for more than half a century, to our new and spacious building, No. 194 Chestnut Street, nearly opposite the Masonic Hall, we deem this a suitable occasion for its publication and issue.

In this Catalogue we have endeavoured so to simplify the arrangement, by a careful classification of the different Instruments, as to facilitate the selection of any that may be desired. The several articles are named numerically. It will be necessary, therefore, merely to designate the numbers of those which may be ordered, with the pages of the Catalogue on which they are inserted. It will be our aim to preserve the reputation which the establishment has acquired, and thus secure a continuance of the patronage which has so long been extended to it.

September, 1854.

McALLISTER & BROTHER.

TERMS CASH, in funds at par in Philadelphia.

All remittances are at the risk of the Sender. As letters containing notes and specie frequently miscarry, it is recommended to remit in a Registered letter, and, where it can be obtained, by a Draft payable to our order. If sent by Express, an additional expense is incurred by the sender.

When goods are ordered to be sent by Express, and the bill to be collected through the Express Company, the person so ordering, will pay the expense of collection.

*. Any goods purchased of us will be packed with care, and with no other charge than the cost of the box, — but we cannot be responsible for breakage or other injury after the package leaves our Store.

The Route by which goods are to be forwarded should be distinctly designated at the time of ordering, as the purchaser has generally a better opportunity than we have, of ascertaining the best mode of conveyance.

SPECTACLES.

Those who have occasion to use Spectacles should, if practicable, attend personally to the selection of them. By trying the spectacles and at the same time availing themselves of the experience of an optician, those of suitable degree and power may thereby be obtained. If, however, persons are at a distance, or from other circumstances, are not able to attend personally, they would do well to send the Spectacles last worn or one of the glasses, with the information of the time which has passed since they suited their sight. The *age* alone is not a sufficient guide, as persons of the same age do not always require the same degree.

It is recommended to begin the wearing of spectacles soon after it is ascertained that the sight is failing. Injury often results from putting off the use of them too long.

It may be known when assistance is required,

1. When, in order to obtain distinct vision, it is necessary to hold a small object farther from the eyes than formerly.
2. When more light is required for reading by night, and for the purpose of obtaining the increased light, the candle is held between the eyes and the book.
3. When the letters of a book seem to run together, and, therefore, cannot be readily distinguished.

Spectacle glasses, or lenses, are numbered according to their *focus*. Convex glasses in spectacles are seldom required or used shorter than 5 inches focus, or longer than about 36 inches. The focus is the number of inches between the lens and a *distinct* representation formed by it of an object, which is at a distance of 50 to 100 feet—thus, take a lens of say 6 inches focus, and stand in the back of a room, opposite the window; then holding the lens at the distance of six inches from the wall, there will be seen upon it a *distinct* image of an object out of doors. If the lens is held at more or less than six inches from the wall, the image would be confused and indistinct: so of a glass of any other focus—the image, formed by refraction, would, *when distinct*, indicate the focus according to the number of inches between the glass and the wall.

The Eye is a lens—in the *perfect* eye, the image of an object is *distinctly* defined by refraction upon the retina; but age generally flattens the eye, and then the refraction is not sufficient to render the image distinct when the rays have reached the retina—to remedy this, Spectacles are resorted to, by means of which glasses are placed before the eye, of sufficient convexity to supply the deficiency which the flattening has occasioned. This defect in

vision generally comes on when about 40 or 45 years old. It is then perceived that the letters of a book are not quite distinct when the book is held at the usual reading distance. For some time, perhaps, a good sized and clear print can still be read by holding the book a little farther off, but at length the use of glasses becomes absolutely necessary. At first, glasses of a slight degree of convexity, such as 30 to 36 inches focus, are sufficient. In the course of a few years, a greater degree is required, say 24, 20, or 18 inches, according to the degree of failure that has taken place; and afterwards, from time to time, the glasses must be changed, to supply and remedy the continued failure of the sight.

It will be seen from the above remarks, that the longer the focus the lower the power; or, as the focus becomes shorter, the degree of convexity increases, and the *power* of each *inch* of focus becomes greater in approaching the shorter foci; for instance, the difference between 36 and 30 inches is scarcely as perceptible as the difference between 7 and 6½ inches. A person who has begun with 36 inches will generally defer procuring a change of glasses until he requires 22, 20, or even 18 inches; after using 22 or 20 inches, the next change will probably be 16, 15, or 14 inches; after using 16 or 15 inches, the next may be 12 or 11; after 12 or 11, it may be that 9 will be required. These are not always the degrees of difference, but the mentioning of them will give some idea of the changes which advancing years render necessary.

As a general rule, it may be remarked, that those spectacles are best adapted to the sight at the time of selection, with which the letters can be seen with the most distinctness at the usual reading distance, say when the book is held at ten or twelve inches from the eyes.

The sight of some persons fails much more rapidly than the sight of others. This may be in consequence of some constitutional tendency, or it may be sometimes occasioned by long-continued, close use of the eyes, overstraining them; a spell of sickness sometimes renders older glasses necessary.

The "age," therefore, is not a sufficient criterion by which to judge what degree of glasses is required. When persons at a distance wish to order spectacles, they should, if possible, send the last spectacles which they have been using, with the statement how long the sight has been failing from them. This information may enable the optician to form some opinion as to the proper degree that would be required.

In *short-sighted* persons, the front of the eye is too far from the retina, and consequently the image of *distant* objects cannot be dis-

tinctly represented on the retina. To remedy this defect of vision, concave glasses are resorted to. The various degrees of concavity are designated by numbers—this mode has always been the practice in England, and has been adopted in this country. It does not seem to have been framed on any principle, and the consequence has been, that the numbers used by different opticians in England are not *exactly* the same. No. 1 is a very slight degree of concavity—so slight, that very few are used—the range of probably three-fourths of all short-sighted persons is from No. 3 to No. 8. Those above No. 8 or No. 10, are generally called *high* numbers; above No. 12, comparatively few are required; there are, however, persons who require as high as No. 20, and even higher. Short-sightedness is not often met with in very young persons; it seldom shows itself before 10 or 12 years of age; from that period up to 20 or 25 years of age, there is often a slight increase, but thenceforward there is, with most short-sighted persons, very little change. It is a common impression, that as advancing years usually flatten the eye, there will be a diminution in the degree of short-sightedness, but this does not generally seem to be the case. Short-sighted persons, who reside at a distance from the place where concave spectacles can be procured, may furnish some idea of the degree that is required, by sending the information how near small print must be held to the eyes in order to read it distinctly—this, however, is only an approximation. It would be much better, even at some inconvenience or expense, to take a journey for the purpose of making the selection from a full assortment. Short-sighted persons require assistance for *distant* objects only; some use glasses for their ordinary reading, but it may be set down as a general rule, that it is better to read without glasses, although there may be some inconvenience from being obliged to hold the book close to the eyes.

Coloured glasses—blue, green, &c., may be worn to protect the eyes from intensely bright light, such as sunshine, or blazing fire—but it is not advisable to use them for reading or working; the habitual using of them, where there is only a moderate light, is found to have an injurious effect in rendering the eyes too sensitive.

The best form for spectacle lenses, is the usual double convex, or double concave, with surfaces of the regular spherical curve; other forms have sometimes been proposed and have been highly praised, but it is sooner or later discovered by most persons who give them a trial, that they possess no advantage over the usual kind.

Lenses for spectacles, ground from pebble or rock crystal, have

sometimes been highly recommended by the opticians of Europe—they do not seem, however, to possess any real advantage over pure glass, except that from the hardness of the material they are not easily scratched. This is, however, of little consequence, as the failure of the eyes, from the advance of age, generally renders a change of the glasses necessary before the surfaces have become perceptibly dulled or scratched.

It may be mentioned that there is a little range to every person's vision, and that it is not essential to have but one certain focus or number, and no other; for instance, a person may find, that with 12 inches focus, a common sized print can be seen distinctly at the proper reading distance, and he may, therefore, consider that focus only to be the proper degree for him; yet he may find it difficult to decide whether 13 inches or 11 inches do not suit equally well. So a short-sighted person is not limited to a particular number of concave glasses as the only suitable degree, but will find that a little higher or a little lower will serve equally well.

Besides the customary failure from age, or the usual short-sightedness, there are peculiar cases of imperfect vision, some of which can scarcely be accounted for. Sometimes quite young persons, even children, can be benefited by wearing old-sighted glasses. In some instances there is a kind of short-sightedness, which can derive no benefit from concave glasses; and there are some cases of imperfect vision which cannot be relieved by either convex or concave glasses.

After an operation for cataract has been performed, convex glasses of very high powers are required, say from 2 to 4 inches focus; 2 or 2½ or 3 inches being required for reading, and 3 or 3½ or 4 inches for distant view.

After spectacles have been worn until 12 or 13 inches focus are required for reading, it is generally found that the sight for distant view also has become a little defective; glasses of a very long focus, such as 48 or 36 inches will remedy the defect, and give as distinct a view of distant objects as formerly. When the sight has become still more impaired, so that about 9 inches focus are required for reading, 22 to 27 inches may suit for distant view; and when the sight for reading requires about 7 inches focus, 13 to 15 inches may be needed for distant view. Some persons keep two pairs of spectacles, so as to be provided for both near and distant view; and others have both sights in the same spectacles, by means of two half glasses, the upper half being for distant view, and the lower for reading. Dr. Franklin was in the habit of using spectacles fitted in this way, and Mr. Jefferson also adopted the same method.

194 CHESTNUT STREET.

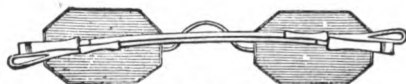
CATALOGUE.

Gold Spectacles.



1. LADIES' PATTERN.

1	Ladies' Pattern, sides in one piece, 11 karat gold,	\$ 5 00
2	" " " 14 "	6 75
3	" " " 16 "	8 00 to 9 00
4	" " " 18 "	11 00
5	" " " very light and delicate,	7 00



6. NARROW SLIDING SIDES.

6	Narrow Sliding Sides, 11 karat gold,	7 00 to 9 00
7	" " " 14 "	8 00 to 10 00
8	" " " 16 "	11 00 to 14 00
9	" " " 13 "	13 00 to 15 00



10. TURN-PIN SIDES.

10	Turn Pin Sides, 11 karat gold,	7 00
11	" " " 14 "	8 00 to 10 00
12	" " " 16 "	11 00 to 14 00
13	" " " 18 "	13 00 to 15 00
14	" " " very light and delicate,	8 00 to 9 00



15. BROAD SLIDING SIDES.

15	Broad Sliding Sides, 11 karat gold,	11 00
16	" " " 14 "	14 00
17	" " " 16 "	15 00
18	" " " 18 "	17 00

 Any other desired pattern made to order.

Silver Spectacles.

19	Ladies' Pattern, sides in one piece,.....	\$ 1 75
20	Narrow Sliding Sides,	2 00
21	Turn-Pin Sides,	2 00
22	Broad Sliding Sides,.....	2 50
23	Narrow Sliding Sides, with divided glasses for far and near sight,	2 50
24	Turn-Pin " " " "	2 50
25	Broad Sliding " " "	3 00
26	Narrow Sliding Sides, Horse Shoe pattern, side glasses— green or blue,	3 50
27	Turn-Pin " " "	3 50
28	Broad Sliding " " "	4 00

Elastic Steel Spectacles.



29. LADIES' PATTERN.

29	Ladies' Pattern, fine quality, Convex Glasses,	1 25
30	" " " Concave Glasses,	1 25
31	" " " Green or Blue Glasses,	1 25
32	" " medium quality, Convex Glasses,	75
33	" " " Concave Glasses,	1 00
34	" " " Green or Blue Glasses,	1 00



35. TURN-PIN SIDES.

35	Turn-Pin Sides, Convex Glasses,.....	1 00 to 3 50
36	“ Concave Glasses,.....	1 25 to 3 50
37	“ Green or Blue Glasses,.....	1 00
38	“ Horse Shoe, side glasses—green or blue,.....	1 00
39	“ “ “ fine quality,.....	2 50 to 3 50
40	Light Sliding Sides,.....	1 50 to 3 00



41. PULPIT PATTERN.

41 Pantoscopic, or Pulpit Spectacles—allowing the wearer to look over them—a very convenient style for public speakers,1 25 to 1 50


42 The same, with single sides, ladies' pattern,1 25

- 43 German Silver Plated Spectacles,50
 44 The same in assorted dozens, with good quality glasses; an
 excellent article for country merchants, per doz., 3 50
 45 German Silver Plated Spectacles, with Cataract Glasses,1 25
 46 Miners' or Turners' Spectacles,—common frames, with large
 eyes, and plain white glasses, to guard the eyes from chips, 37

* * A great variety of Steel and other Spectacles, in assorted dozens,
 at low prices to the trade.

Hand and Nose Spectacles, &c.



- 47 Hand Spectacles, solid gold, to fold, in gold covers, 16 00 to 35 00
 48 " " " spring in joint,8 00 to 18 00
 49 " " gold plated, "5 00
 50 " " solid gold, square and octagon eyes,
 without spring,7 00 to 10 00
 51 " " " round eyes, without spring, 7 00 to 10 00
 52 " " silver, "1 50
 53 " " tortoise shell, " " 1 25 to 1 50
 54 " " horn, " "75
 55 " " steel, " " 1 00 to 1 50
 56 " " solid gold " spring to clasp
 the nose,8 00 to 10 00
 57 " " tortoise shell, " "1 75 to 4 00
 58 " " horn, " "1 00 to 1 50
 59 " " steel, " "1 00 to 1 50
 60 Single Eye Glasses, solid gold,4 00 to 10 00
 61 " " gold plated,2 00
 62 " " tortoise shell,75
 63 " " horn,50
 64 " " steel,50
 65 Reading Glasses, mounted in horn, 2 to 4 inches diameter.
 These are also useful in examining Maps, Engra-
 vings, &c.,75 to 4 00
 66  Wire Gauze Eye Protectors, with green
 or blue glasses and elastic band, an
 excellent article for Railroad tra-
 velling,75
 67 Wire Gauze Eye Protectors, green or blue glasses, with steel
 sides, as spectacles,2 50 to 3 00
 68 Goggles, with plated rims,37
 69 Silk Shades, with elastic bands, for weak eyes,50
 70 Parchment Shades,25

M•ALLISTER & BROTHER,

10


SPECTACLES.

Spectacle Glasses of best quality fitted to frames at the following Prices:

71	Convex, white,	87
72	" Cataract,	75
78	" Cylindrical,	87
74	" Periscopic,	50
75	" Green or Blue,	62
76	" Divided Glasses,	75 to 1 00
77	Concave, white, to No. 12,	50
78	" " No. 12 to No. 34,	62 to 1 50
79	" Cylindrical,	87
80	" Periscopic,	75 to 5 00
81	" Green or Blue,	75
82	Plain Green or Blue Glasses,	50
83	Pebbles, Convex,	2 00
84	" Concave,	2 00

Spectacle Cases.

85	Morocco,	12 to 18 cts.
86	Planished,	25 "
87	German Silver,	50 "
88	Papier Maché,	25 to 50 "
89	Steel,	25 "
90	Silver,	\$8 00 to 15 00
91	Gold,	35 00 to 75 00

 The Prices attached to the Spectacles in the foregoing list, are what they will cost with the usual Convex Glasses, (unless where otherwise specified.) They will cost more with high numbers of Convex or Concave, Cataract, Green or Blue Convex or Concave, Cylindrical and Periscopic Glasses, or with Pebbles.

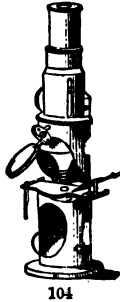
Compound Microscopes.



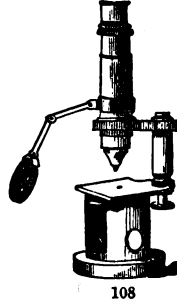
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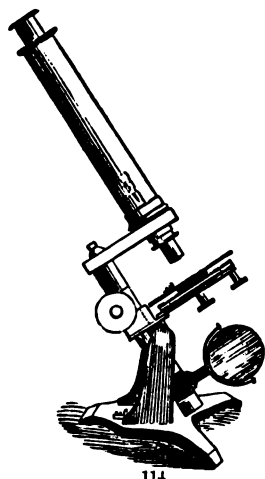
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108

 We have for sale a very large assortment of Compound Microscopes, neatly mounted in brass, and packed in mahogany boxes, with a magnifying power of from 35 to 1000 diameters, varying in price according to the power or completeness, of which any information will be given by letter that may be desired, either upon the price or construction. Persons desirous of procuring a Microscope will do well to give us some idea of the price they are willing to go to, or the power they wish, and we will send a description of such as we have of the kind. We give below a list of some of those we usually have on hand, being about the best for the prices.

- | | | |
|-----|--|--------|
| 101 | French Microscope, one object lens, power 35 diameters, | \$2 00 |
| 102 | “ “ two “ “ 30 and 60 “ | 3 25 |
| 103 | “ “ three “ “ 20, 60 and 100 diameters, with illuminating lens,.... | 5 50 |
| 104 | “ “ three object lenses, power 20, 60 and 100 diameters, illuminating lens and rack adjustment,.... | 10 00 |
| 105 | French Microscope, three object lenses, power 60, 150 and 200 diameters, illuminating lens and rack adjustment,.... | 20 00 |
| 106 | Achromatic Microscope, with two eye pieces, two sets of Object Glasses, illuminating lens and rack adjustment. Power 50 to 375 diameters. (<i>An excellent instrument for the price, and well adapted for a medical man.</i>)..... | 32 00 |
| 107 | Oberhäuser's Vertical Microscope, with two eye pieces, two sets of Achromatic Object Glasses, illuminating lens, and adjusting stage: power 50 to 300 diameters,..... | 40 00 |
| 108 | Oberhäuser's Vertical Microscope, with five eye pieces, three sets of Achromatic Object Glasses, illuminating lens and rack adjustment, with a prism to draw the object upon paper; power 40 to 600 diameters. (Oberhäuser's Drawing Apparatus is superior to any other make, French or English,.....) | 100 00 |
| 109 | Oberhäuser's Vertical Microscope, same as No. 108, with addition of a Polarising Apparatus, | 125 00 |
| 110 | Nacht's Vertical Microscope, with two eye pieces, two sets of Achromatic Object Glasses, illuminating lens and rack adjustment; power 60 to 500 diameters,..... | 45 00 |



- 111 Nachet's Microscope, on joint to turn to any angle; with two eye pieces, two sets of Achromatic Object Glasses, illuminating lens and rack adjustment; power 60 to 500 diameters,60 00
- 112 Nachet's Microscope, on joint to turn to any angle; with three eye pieces, three sets of Achromatic Object Glasses, illuminating lens, and rack adjustment; 60 to 800 diameters,75 00
- 113 Nachet's Microscope, same as No. 112, with addition of Drawing Apparatus,80 00
- 114 Achromatic Microscope, on joint to turn to any angle; with two eye pieces, three sets of Object Glasses, lever stage, illuminating lens and rack adjustment; power 50 to 500 diameters,50 00
- 115 French Microscope, on joint to turn to any angle, three Object Lenses; 75, 125 and 175 diameters,18 00
- 116 Achromatic Solar Microscope,50 00 to 60 00
- 117 Microscope for examining the Ear,3 75
- 130 Condensing Lens, on stand, with several movements, 2 75 to 5 00
- 131 Micrometer on Glass—500 lines to the inch,3 75
- 132 Glass Slips for Microscopic Slides or Preparations, per doz., 37
- 133 Glass Cells and Covers for injected “ “ 2 25 to 3 25
- 134 Very Thin Glass, for covering Microscopic Objects—in squares 20 cents per dozen, in sheets per ounce,75
- 135 Marine Glue, in tin boxes,12 cts. to 25
- 136 Eye Pieces for Microscopes, of various powers,2 25 to 2 50
- 137 Sets of Achromatic Object Glasses in three brass cells, $\frac{1}{2}$ inch \$4, $\frac{1}{4}$ inch 5 25, $\frac{1}{8}$ inch 7 50

MICROSCOPIC OBJECTS.

- 138 Anatomical Preparations, finely put up, each,75
- 139 Urinary Deposits, per set of twelve Objects,7 25
- 140 Preparations of Insects, Infusoria, &c., each 20 cents; among which are the following:—

Eye of fly, wing of fly, mouth of fly, foot of fly, skin of a caterpillar, skin of a spider, trachea of a silk-worm, flea, proboscis of a butterfly, petal of a geranium, palate of a snail, guano, sting of a bee, mouth of a bee, acarus de xiloepe, itch insect, down of a moth, sponge insect, (specules de gorge,) human blood, blood of a cat, of a rat, duck, rabbit, chicken, frog, eel, and carp; hair of a rat, cat, mouse, bat, mole, rabbit, dormouse; section of cedar wood, hazel wood, dog wood; section of charcoal: Infusoria objects, as navicula major, navicula attenuata, navicula hippocampus, tripoli, biddulphia, epithemia zebra, pollen of marsh mallow, &c. &c.

For List of works on Microscope, see last page of Catalogue.

Simple Microscopes, Watchmakers' Glasses, &c. &c.



150



152



155



158



161

150	Horn Mounting, round, 1 lens,.....	37 to 1 00
151	" " " 2 "	50 to 1 00
152	" " bellows-shaped, 1 lens,.....	37 to 75
153	Brass " " 1 "	60 to 75
154	Ger. Silver " " 1 "	62 to 1 00
155	Horn " " 2 "	50 to 1 25
156	Brass " " 2 "	75 to 1 25
157	Ger. Silver " " 2 "	1 00 to 2 00
158	Horn " " 3 "	75 to 1 50
159	Brass " " 3 "	1 00
160	Ger. Silver " " 3 "	1 50
161	Horn " " 2 " small lens of very high power.....	1 50



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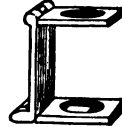
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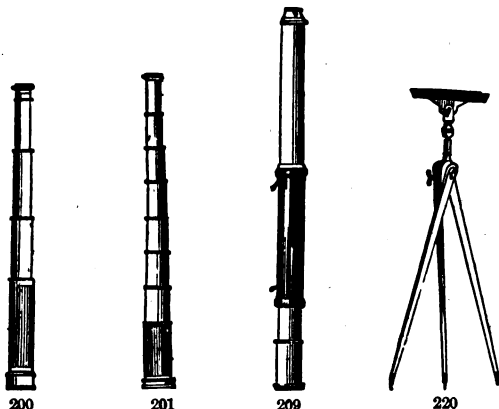
176




182

171	Watchmakers' Glasses, horn mounting,.....	25 to 1 25
172	" " " with extra powers,.....	75
173	Engravers' Glasses, metal mounting—consist of two plano-convex lenses, and give a very clear field of view,.....	50 to 1 75
174	Engravers' Glasses, same plan as No. 173, wood mounting,.....	1 00
175	Screw-Adjusting Magnifying Glasses, on three brass feet,.....	75
176	Stanhope Lens, silver,.....	1 25
177	" " ivory,.....	75
178	Coddington Lens, silver,.....	1 75
179	" " " with cover,.....	2 50
180	" " brass,.....	1 00
181	Cylindrical Magnifying Lenses,.....	3 50 to 5 00
182	Linen provers, $\frac{1}{4}$ inch aperture, to count the thread in linen—very portable,.....	50

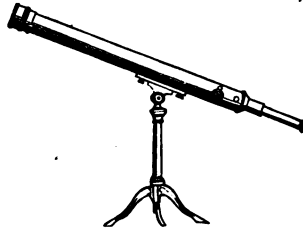
Achromatic Spy Glasses and Telescopes.



- | | | |
|-----|--|--------------|
| 200 | Wood body with cap, three draws, 15 inches long when drawn out, 6 inches when shut up, Object Glass $\frac{1}{2}$ inch diameter,..... | 2 50 |
| 201 | Wood body with cap, six draws, 16 inches when drawn out, 4 $\frac{1}{2}$ inches shut up, Object Glass $\frac{1}{2}$ inch diameter; a very portable pocket Spy Glass,..... | 3 50 |
| 202 | Wood body with cap, six draws, 17 inches when drawn out, 4 $\frac{1}{2}$ inches shut up; Object Glass 1 $\frac{1}{2}$ inch diameter. This is larger and more powerful than No. 201..... | 5 00 |
| 203 | Wood body with cap, three draws, 30 inches drawn out, 10 inches shut up, Object Glass 1 $\frac{1}{2}$ inch diameter,..... | 6 00 |
| 204 | Wood body with cap, five draws, 28 inches when drawn out, 7 $\frac{1}{2}$ inches when shut up, Object Glass 1 $\frac{1}{2}$ inch diameter; about the same power as No. 203, but more portable; they are both very clear and more powerful than the usual ship telescopes,..... | 8 50 |
| 205 | Wood body with cap, four draws, 37 inches when drawn out, 11 inches when shut up, Object Glass 1 $\frac{1}{2}$ inch diameter; a very superior glass, defines well the Moons of Jupiter, | 10 00 |
| 206 | Same as No. 205, with the addition of a wooden tripod stand, which is necessary for a glass of so high power, | 14 00 |
| 207 | Ship Spy Glass, wood or metal body, with shade, one draw, 35 inches when drawn out, 20 inches shut up, Object Glass, 1 $\frac{1}{2}$ inch diameter..... | 5 00 to 6 00 |
| 208 | Same as No. 207, but with two draws; more portable, | 5 00 to 6 00 |

- 209 Fine quality Ship Spy Glass, good screws and brass work, brass body, covered with cord, has shade to keep off the sun and rain; one draw, 36 inches drawn out, 20 inches shut up, Object Glass $1\frac{1}{2}$ inch diameter,.....9 00
- 210 Same as No. 209, but with two draws; more portable,.....9 00
- 211 Wood body, with cap, three draws, 32 inches drawn out, $10\frac{1}{2}$ inches shut up, Object Glass $1\frac{1}{2}$ inch diameter, whole length, with the extension eye piece, 37 inches. This instrument is made by Utschneider & Fraunhofer, Munich, is of the greatest power and clearness of any we have for land uses, and has an extension eye piece by which the power is so much increased as to be useful for astronomical observations, and yet the image not inverted. Price, including a screw support,.....45 00
-  We have many other varieties of Spy Glasses, but the above are the most desirable for the price.
- 220 Wooden Tripod Stand, with vertical and horizontal motion, upon which to place a Spy Glass; an exceedingly useful article, as a glass of much power cannot be held in the hand with sufficient steadiness to produce the best effect,.....3 50 to 4 00
- 221 Wooden Tripod Stand of superior quality,.....11 00

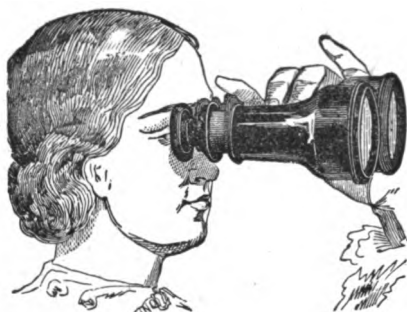
Astronomical Telescopes.



- 225 Brass body, 21 inches long, on brass tripod 13 inches high; 1 astronomical and 1 terrestrial eye piece, with sun glass; rack adjustment for focus; object glass $1\frac{9}{16}$ in. diameter, 30 00
- 226 Brass body, 31 inches long, on brass tripod 17 inches high; 1 astronomical and 1 terrestrial eye piece, with sun glass; rack adjustment for focus; object glass $2\frac{1}{4}$ in. diameter, 50 00
- 227 Brass body, 44 inches long, on brass tripod 19 inches high; 1 astronomical and 1 terrestrial eye piece, with sun glass; rack adjustment for focus; object glass $2\frac{1}{2}$ in. diameter, 100 00
- 228 Brass body, 55 inches long, no tripod; 2 astronomical and 2 terrestrial eye pieces, with sun glass and Finder; rack adjustment for focus; object glass 4 inches diameter, ...200 00

 Each of the above is enclosed in a neat Walnut Box.

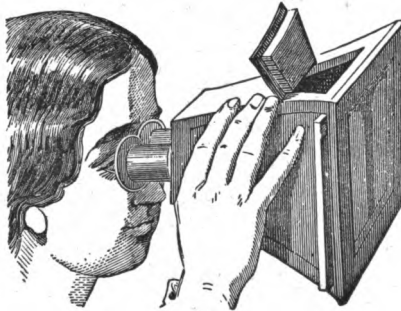
Opera Glasses.



The Opera Glass is a small telescope, especially designed for use in places of public amusement, whence it derives its name, and is constructed on the principle of the Galilean Telescope, consisting of a Convex Achromatic Object Glass, and a Concave Eye Glass. Opera Glasses are made both single and double, but the former kind is now little used. With the Double Opera Glass, there is not the inconvenience which occurs with the Spy Glass and Single Opera Glass, of using but one eye, keeping the other closed. From its portability, neatness of appearance, and the ease with which the focus is adjusted, it is well adapted for the tourist. The magnifying power is not so great as that of a good Spy Glass, but the area of vision is much larger and very clear.

230	Achromatic Opera Glass, straight body,.....	2 50
231	“ “ all black,.....	4 00 to 10 00
232	“ “ black and gilt,.....	4 00 to 10 00
233	“ “ ivory and gilt,.....	6 00 to 20 00
234	“ “ pearl and gilt,.....	8 00 to 20 00
235	“ “ enamel and gilt,.....	12 00 to 20 00
236	Twelve Verres Opera Glass, very portable and very clear. Triple Achromatic Eye Glasses and Object Glasses,.....	12 00 to 20 00
237	Marine Opera Glasses, for Sea Captains. These give a large field of view; having only two lenses, there is but little loss of sight, and they are, therefore, preferable as a night glass,.....	15 00 to 20 00
238	Single Opera Glasses, small and neat,.....	2 25 to 3 00

The Stereoscope.



240

THE STEREOSCOPE, (from the Greek words *stereos*, solid, and *skopein*, to see,) is a beautiful optical instrument, the result of the investigations on the subject of Binocular vision, which have been pursued for some years past by eminent scientific men in Europe.

By means of this ingenious and curious instrument, two representations on a plane of the same object, taken from different points, appear, when viewed at the same time by both eyes, as only a single picture: and the image has the semblance of being solid or in relief. To produce this effect, accurate drawings of an object may be made from two positions, but the most pleasing and interesting effects are from pictures taken by the Daguerreotype. Views of places and buildings are taken, and when placed in the Stereoscope, the illusion is complete; it seems scarcely possible that it is a picture that is seen—some objects will appear as if they could almost be touched with the hand, others as if really at a great distance—Paris, Rome and London, may thus be brought to us, if we cannot go to them.

The above engraving gives the mode of using the Stereoscope. If the two pictures do not coalesce, so as to form a single picture, it is necessary merely to turn round slowly, while looking, the top rim of the metallic eye piece, until the two pictures exactly overlap each other.

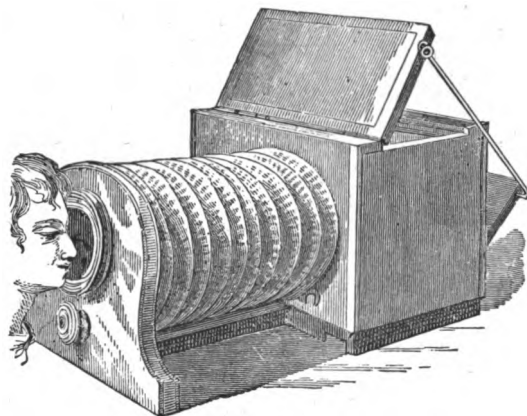
240 Stereoscope, mahogany,.....	2 50,	3 00
241 " japanned,.....		1 00
242 " morocco, folds into a small space,.....	2 50	
243 Black Paper Diagrams of Geometrical Figures, &c.,.....		05
244 Daguerreotype Views, on paper,.....	25	
245 " " on glass,.....	1 50 to 2 00	

Our assortment of Daguerreotype Views, in the highest style of the Art, executed by Langenheim, whose agents we are, is large, and continually increasing; among those usually on hand are the following:—

Coliseum, Arch of Constantine, Arch of Vespasian, Trajan's Column, Forum, Fortress St. Angelo, St. Peter's &c., at Rome; Tuilleries, Louvre, Luxembourg, Notre Dame, Madeleine, Pantheon, Bourse, Hotel des Invalides, Hotel de Ville, Prefecture of Police, Place Vendôme, Place de la Bastille, Place de la Concorde, Arc de l'Etoile, Arc du Carrousel, &c., Paris; Cologne, Strasbourg, Heidelberg, Mayence, Stolzenfels, Bacharach Oberwessel, Rheinsteinst, &c., on the Rhine; Rouen, Rheims, and other principal European cities. Tower of London, House of Parliament, Westminster Abbey, Lambeth Palace, Trafalgar Square, Hyde Park, St. James' Park, Richmond Park, St. Paul's Church, Buckingham Palace, Windsor Castle, Guy's Cliff, Birth-place of Shakespeare, &c., in England; Tomb of Washington, Washington's Oak, Mount Vernon, Capitol, Treasury Building, President's House, Niagara Falls, Girard College, Fairmount Water Works, Independence Hall, Philadelphia Exchange, &c., in America. Three Graces by Canova; Battle of the Centaurs, Bust of Washington, Antiques from the Louvre, and other Statuary.

2*

Polyorama Panoptique.



An entertaining instrument for the family circle, by which one painting will dissolve into another, or change from day to night, merely by viewing them through the medium of reflected or transmitted light.

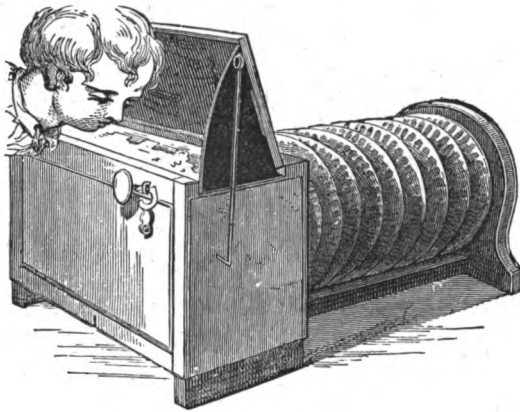
This is quite a different article from the Magic Lantern, as but one person can see the views at the same time. The observer, while holding the instrument before a strong light, looks through a Convex Lens at the picture, and at the same time produces the dissolving effect by a gradual change in the admission of the light, giving a most pleasing and interesting effect. They are packed in neat square boxes, with six diagrams, convex lens, and the various adjustments.

250	Polyorama Panoptique,	6 views,	4 by 6 inches each,	.....	2 00
251	"	"	6 " 6 by 8 "	.....	3 25
252	"	"	6 " 7 by 10 "	.....	5 00
253	"	"	6 " 10 by 13 "	.....	9 00

Among the views are the following:—Tulleries; Louvre; Palais Royal; Champs Elysée; Place de la Concorde; Place Vendôme; Pere la Chaise; Boulevards des Italiens; Arc de l'Etoile; Madeleine; Notre Dame; Versailles; St. Cloud; Fontainebleau; St. Peter's, Rome; Venice; Rouen; Lyons; Nantes; Havre; Bordeaux; St. Paul's, London; Thames Tunnel; Crystal Palace; Regent Street; Trafalgar Square; Tower of London; Burns' Cottage; Glasgow; Windsor Castle, &c. &c.

Polyorama Panoptique,

WITH CAMERA OBSCURA ATTACHMENT.



This instrument, in addition to the Polyoramic effect, possesses a very neat arrangement, by which a good Camera Obscura is formed, presenting "an accurate picture, in which the trees and clouds will appear to move in the wind, and passing objects to display the same movements and gestures which they exhibit to the eye."

They are packed in neat square boxes, with six diagrams, Convex Lens, Mirror, Tracing Paper, and the various adjustments.

254	Polyorama with Camera, 6 views, 4 by 6 inches each,	.....	4 00
255	" " " 6 " 6 by 8 "	.....	6 00
256	" " " 6 " 7 by 10 "	.....	9 00
257	" " " 6 " 10 by 13 "	.....	15 00

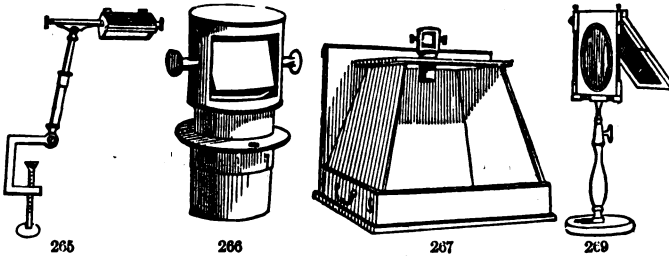
Extra Views for the Polyorama Panoptique and Polyorama with Camera.

258	Set of 6 views, 4 by 6 inches each, per set,	.....	1 25
259	" 6 " 6 by 8 " " "	.....	1 75
260	" 6 " 7 by 10 " " "	.....	3 00
261	" " " 10 by 13 " " "	.....	5 25

McALLISTER & BROTHER,

20 CAMERA LUCIDA, CAMERA OBSCURA, ETC.

Camera Lucida, Camera Obscura, &c.



265 Camera Lucida, 4 00 to 12 00

A very portable instrument for sketching Landscapes: it is much employed in England by artists, but is somewhat unsatisfactory, as the point of the pencil cannot be very plainly seen; it is, nevertheless, a good instrument, and best adapted for the open air, where the light is strong.

266 Camera Obscura Head or Lens, without box—a Prismatic Lens, mounted with brass. This is the best kind of lens for a Camera Obscura, as it forms both lens and mirror, 3 25 to 8 00

267 Camera Obscura, with portable box, 15 00

In the Camera Obscura, the Landscape is thrown down upon the paper in a dark chamber or box, and can readily be traced with the pencil.

268 Diagraph. A new French invention for mechanically copying Landscapes or Machinery. The artist keeps his eye upon the Tracer, and causes it to follow the outline of the object, and the pencil marks upon the paper a corresponding movement; its use requires a level surface 24 inches square, 29 00

269 Diagonal Mirror with Convex Lens, for viewing perspective prints, 1 50 to 2 00

270 Pictures for the above—views in Switzerland, France, &c., per dozen, 1 00 to 3 00

Claude Lorraine, or Landscape Mirror.

271 Claude Lorraine, or Landscape Mirror. A pleasing and beautiful instrument for viewing Clouds, Landscapes, &c.; particularly adapted for use in the country and at the sea-shore. As the Mirror condenses or diminishes the view into a true perspective effect, the instrument is invaluable to the artist, and a very desirable companion for the tourist. The Mirror produces instantaneously the most charming reflection of scenery, buildings, &c., 2 25 to 6 00

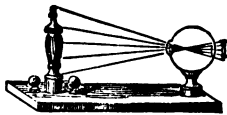
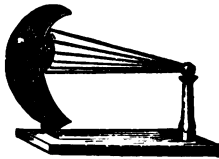
Prisms, &c.

- | | | |
|-------|---|---------------|
| 275 | Glass Prisms, 3 inches, 50 cents; 4 inches, 87 cents; | |
| | 5 inches,..... | 1 25 |
| 276 | " " 5 inches, three kinds of glass, united,..... | 1 25 |
| <hr/> | | |
| 280 | Nichol's Prisms, in brass,..... | 6 00 to 8 00 |
| 281 | Polariscope Savart, | 3 75 |
| 282 | Polarising Mirrors, | 3 75 |
| 283 | Selenite Designs for Polariscope, each,..... | 2 00 to 10 00 |
| <hr/> | | |
| 285 | Periphanoscope,..... | 1 50 to 2 00 |
| 286 | Kaleidoscope,..... | 37 |
| 287 | Polyprisms—making many heads out of one,..... | 25 |

MIRRORS IN BLACK WOOD FRAMES.

- | | | |
|-----|--|--------------|
| 290 | Magnifying on one side, Diminishing on the other, 50 cts. to 11 00 | |
| 291 | Cylindrical, (elongating and shortening,)..... | 1 50 to 3 00 |
| 292 | Multiplying, (producing several images,)..... | 1 50 to 3 00 |

- 295 Pseudoscope, (from two Greek words, *pseudos*, false, and *skopein*, to see), a new instrument, invented by Prof. Wheatstone, which has the remarkable property of giving a false appearance to an object—thus, looking through it at a coin, the impression appears sunk, instead of raised,.....12 50



298

297

- 296 Model of the Eye, for Schools, 3 parts, with diagram,.....18 00
297 Retina Machine, with Concave and Convex Lenses—demonstrates the utility of spectacles,2 50

M^cALLISTER & BROTHER,

22

LENSES, ETC.

Lenses, &c.

300 Demonstration Lenses. A set of 6, showing the formation of the various kinds of lenses,1 50 to 3 00

COSMORAMA LENSES.

301	Double Convex Lens, 6 in. diam., 30 to 72 in. focus,	2 50 to 3 00
302	" " " 5 " 48 to 72 "	2 00 to 3 00
303	" " " 5 " 20 to 30 "	1 50 to 2 00
304	" " " 4 " 8 to 20 "	1 00 to 1 50
305	" " " 3 " 8 to 20 "	.....1 00
306	" " " 3 " 6 to 36 "	.....1 00
307	" " " 2 " 6 to 36 "	.....60
308	" " " 1½ " 2 to 5 "	.....37
309	Plano-Convex Lens, 4 " 8 to 20 "	.....62
310	" " " 3 " 8 to 20 "	.....37

LENSES, FIRST QUALITY FOR MICROSCOPES.

315	Double Convex Lens, 1 in. diam., 2 inches focus,	.....75
316	" " " ¾ " 1½ "	.....75
317	" " " ¾ " 1½ "	.....75
318	" " " ½ " 1 "	.....75
319	" " " ¾ " ¾ "	.....75
320	" " " ¾ " ¾ "	.....75
321	" " " 3-16ths " ¼ "	.....75
322	Plano-Convex " 1 " 2 "	.....75
323	" " " ¾ " 1½ "	.....75
324	" " " ¾ " 1½ "	.....75
325	" " " ½ " 1 "	.....75
326	" " " ¾ " ¾ "	.....75
327	" " " ¼ " ½ "	.....75
328	" " " 3-16ths " ¼ "	.....75

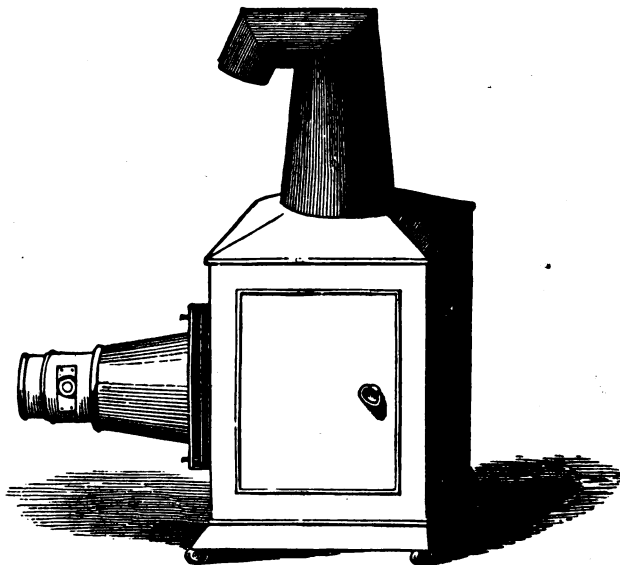
ACHROMATIC OBJECT GLASSES FOR ASTRONOMICAL TELESCOPES,

340	2 inches diameter, 36 inches focus, no mounting,	.....5 50
341	2½ " " 44 " " "	.....11 00
342	3 " " 48 " " "	.....22 00
343	Eye Pieces for Astronomical Telescopes, Brass Tube, with Sun Glass,.....	4 00

ACHROMATIC OBJECT GLASSES FOR SHIP TELESCOPES,

344	12 to 24 inches focus,.....	1 25 to 3 00
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Magic Lanterns.

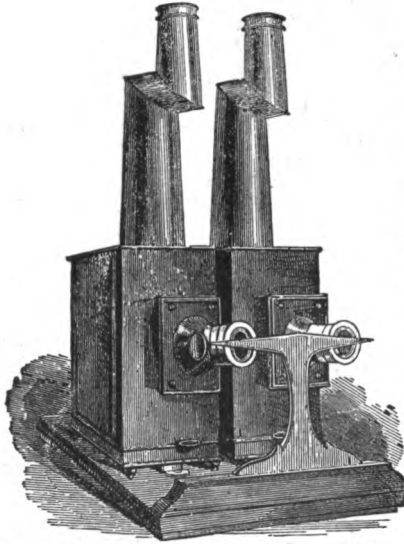


We have carefully availed ourselves of every additional improvement to the Magic Lantern, and have always on hand a very large assortment of beautifully executed Slides, elucidating every branch of popular knowledge, to which we invite the attention of Teachers, Superintendents of Sunday Schools, and Public Lecturers.

A Discount of Five per cent. is made from bills of Magic Lanterns and Slides, when exceeding Fifty Dollars.

- 350 Improved Phantasmagoria Lantern, with rack adjustment for focus, spring to hold slides, Solar Lamp to burn lard or oil; with condensing lenses 4 inches diameter; the box 10 by 8 inches square, and 16 inches high.....23 00
- 351 Improved Phantasmagoria Lantern, with rack adjustment for focus, spring to hold slides, Solar Lamp to burn lard or oil; with condensing lenses 3½ inches diameter; the box 10 by 8 inches square, and 16 inches high,.....18 00
- 352 Phantasmagoria Lantern, with brass slip-tube for focus, spring to hold slides, Solar Lamp to burn lard or oil; with condensing lenses 3½ inches diameter; the box 10 by 8 inches square, and 16 inches high,.....16 00
- 353 Magic Lantern, no brass work, no spring, entirely plain, but of as high a magnifying power as the \$18 Lantern; Solar Lamp to burn lard or oil; with condensing lenses 3 inches diameter; the box 10 by 6 inches square, and 14 inches high,12 00

Dissolving Views.

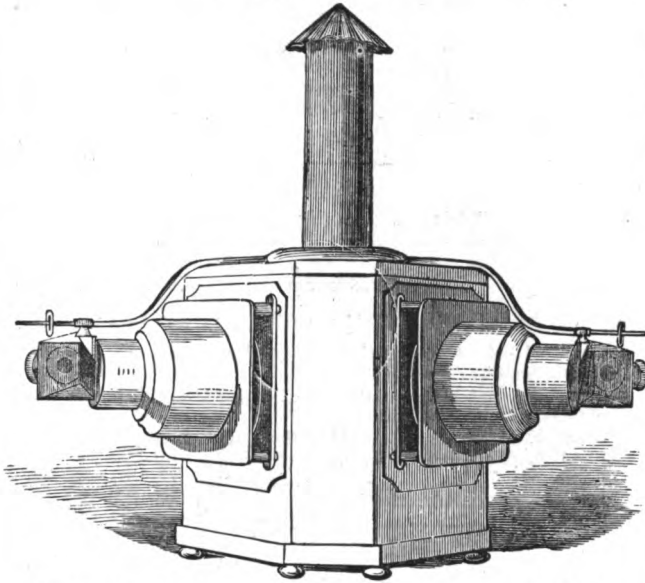


The exhibition of the dissolving views is one of the most extraordinary and magical effects that the lantern is capable of producing. No term can better express these wonderful changes than "dissolving;" for while the spectator is viewing a painting it is made, almost imperceptibly, to melt into quite a dissimilar picture. A painting representing the exterior of a Cathedral being under view, this is insensibly changed into the interior of the same building, without the observer being able to detect any apparent alteration, until the new picture appears to grow perfectly distinct before him; hence he is led to suppose the change to have taken place upon the

same painting; whereas a new view has been substituted without leaving the screen in darkness for an instant. The mode of producing this pleasing and fascinating illusion is by the employment of two Phantasmagoria Lanterns, of precisely the same magnifying powers, and arranged on a stand, as shown in the above illustration.

- 354 A Pair of Phantasmagoria Lanterns, with rack adjustments for focus, springs to hold slides, Solar Lamps to burn lard or oil; with condensing lenses 4 inches diameter; the boxes 10 by 8 inches square and 16 inches high—the whole arranged on a stand, with the apparatus for producing the dissolving effect,51 00
- 355 A Pair of Phantasmagoria Lanterns, with rack adjustments for focus, springs to hold slides, Solar Lamps to burn lard or oil; with condensing lenses 3½ inches diameter; the boxes 10 by 8 inches square, and 16 inches high—the whole arranged on a stand with the apparatus for producing the dissolving effect,41 00
- 356 A Pair of Phantasmagoria Lanterns, with brass slip-tubes for focus, springs to hold slides, Solar lamps to burn lard or oil; with condensing lenses 3½ inches diameter; the boxes 10 by 8 inches square and 16 inches high—the whole arranged on a stand with the apparatus for producing the dissolving effect,37 00

The Dioptric Lantern.



This dissolving apparatus possesses within as small a compass as the single lantern of the ordinary description, all the powers of two lanterns, with only one small lamp of intense brightness, free from the objectionable smell and great heat of ordinary lamps, whereby a disc of 20 feet for each tube may be obtained. Each disc is capable of being darkened to any required extent, without the least shadow on any portion of the picture; and from the superiority in the optical arrangements of the apparatus, each picture is perfectly flat and well defined to the extreme edge. As the discs may be thrown either together on one circle or united at various distances in length upon the screen, the number of effects which may be produced may be easily imagined; they present, first—a succession of dissolving views, so accurately and gradually dissolving, that the most experienced eye cannot perceive the operation going on. Secondly, various effects, as falling snow, &c., succeeded by sunshine and rainbow; volcanoes in eruption, &c. Thirdly, double discs, as the two hemispheres of the globe on the screen at once, full size—or two separate portions of one diagram of extended length, without crowding, as at present, all the objects into one disc. Fourthly, combinations of two moving or revolving slides on one circle, as all the planetary system in motion, &c. &c., or all the vagaries of two chromatropes taken in combination, and permutations of one or two together. The portability of the apparatus is also of importance; the whole can be packed, viz., the lantern, gas bag, retort, purifier, &c., with several dozen slides, in a case two feet square, and about eighteen inches deep—a decided advantage over every other description of dissolving-view apparatus.

A small oil lamp is used with the Dioptric, and a stream of oxygen gas is thrown upon the flame, producing an intense light, but little inferior to the hydro-oxygen light.

357 Superior Prismatic Dioptric Lantern, with two sets of condensers $3\frac{1}{4}$ inches in diameter; with argand lamp,

platina wire, &c.; iron retort, purifying bottle, India rubber gas bag, and tubing for manufacturing the oxygen gas—with printed instructions,.....140 00

All the lanterns are priced without any reference to slides whatever—that is, the prices are for the lanterns when complete and ready for use, with lamps and necessary appendages, including printed instructions, but no slides accompany any of the lanterns at the prices above mentioned.

Slides or Paintings.

360. ASTRONOMICAL DIAGRAMS,

Of the following Views, in 11 Sliders, packed in a box with a Description.

Slider No. 1.—System of Ptolemy, ditto Copernicus, ditto Tycho Brahe, ditto Newton; 2, Telescopic view of the Moon, ditto of Jupiter, ditto of Saturn; 3, comparative sizes of the planets, comparative distances of the planets; Orbit of a comet, comet of 1811; 4, Signs of the Zodiac, Inclination of the Planets' Orbits, Direct and Retrograde Motion, (*lever moveable*;) 5, Rotundity of the Earth; the Seasons; 6, Phases of the Moon; the Earth's Shadow; 7, cause of the Sun's Eclipse, ditto Moon's; Inclination of the Moon's Orbit, (*moveable*;) 8, Eclipse of the Sun, with a Transit of Venus, (*moveable*.) Eclipse of the Moon; 9, Spring Tide at New Moon, ditto Full Moon; 10, Neptune; The Constellation Orion, ditto Ursa Major; 11, Various Nebulæ; a portion of the Milky Way. Per box,\$12 00 and 18 00

361. ASTRONOMICAL DIAGRAMS,

In a Series of 30 three inch Paintings, in a box.

These diagrams, none of which have motion, are intended to accompany the moveable sliders. They are all in one-hole sliders, covered with glasses, and are very superior in point of execution.

Slider No. 1.—System of Ptolemy; 2, ditto Copernicus and Newton; 3, Elliptical Orbits of the Planets; 4, Inclination of the Planets' Orbits; 5, Spots on the Sun; 6, Telescopic View of Venus, showing three Phases; 7, ditto of Mars; 8, ditto of Jupiter; 9, ditto of Saturn; 10, Comparative sizes of the Sun and Planets; 11, Comparative distances of the Planets from the Sun; 12, Comparative sizes of the Sun's Disc, as seen from the different planets; 13, Orbit of Halley's Comets; 14, Appearance of different Comets, from 1680 to 1843; 15, Direct and Retrograde Motion of Planets; 16, Signs of the Zodiac; 17, The Seasons; 18, Telescopic View of the Moon; 19, ditto of the Southern Cusp; 20, Phases of the Moon; 21, Imaginary view of the Earth as seen from

the Moon; 22, Causes of the Sun's and Moon's Eclipse; 23, Inclination of the Moon's Orbit; 24, Diagram to explain Curvilinear Motion; 25, ditto Parallax; 26, ditto Refraction and Twilight; 27, Constellation Orion; 28, ditto Ursa Major; 29, Various Nebulæ; 30, Imaginary View of the Milky Way, as seen from a remote Nebula. Per box,.....35 00

362. MOVEABLE ASTRONOMICAL DIAGRAMS.

The Motion produced by a Rack; in a set of 9 Sliders, packed in a box with a lock.

Slider No. 1, The Solar System, showing the Revolution of all the Planets, with their satellites, round the Sun; 2, The Earth's annual Motion round the Sun, showing the Parallelism of its Axis, thus producing the Seasons; 3, This Diagram illustrates the cause of Spring and Neap Tides, and shows the Moon's Phases during its Revolution; 4, This Diagram illustrates the apparent, direct and retrograde motion of Venus or Mercury, and also its stationary appearance; 5, A Diagram to prove the Earth's Rotundity by a Ship sailing round the Globe, and a line drawn from the eye of the observer placed on an eminence; 6, This Diagram illustrates the Eccentric Revolution of a Comet round the Sun, and shows the appearance of its Tail at different points of its Orbit; 7, The Diurnal Motion of the Earth, showing the rising and setting of the Sun, illustrating the cause of day and night, by the Earth's rotation upon its Axis; 8, This Diagram illustrates the Annual Motion of the Earth round the Sun, with the Monthly Lunations of the Moon; 9, This Diagram shows the various Eclipses of the Sun, with the Transit of Venus; the Sun appears as seen through a Telescope. Per box,33 00 and 35 00

363. SELECT SCRIPTURE SUBJECTS.

In 12 Sliders, containing 39 Subjects, packed in a box, each glass 2½ inches diameter.

Slider No. 1, Adam and Eve driven out of Paradise, Hagar and Ishmael, Abraham offering Isaac, Rebecca at the Well; 2, Joseph sold into Egypt, Joseph meeting his Father, the Finding of Moses; 3, The Ark of the Covenant, the Dress of the High Priest, the Altar of Incense; 4, The Altar of Burnt Offering, an Aaronite or Scribe, the Golden Candlestick; 5, Return of the Spies, the Brazen Serpent, Balaam and his Ass; 6, Samson and the Lion, Esther before Ahasuerus, the Infant Samuel, Elijah fed by Ravens; 7, David and Goliath, David Dancing before the Ark, Nathan Reproving David; 8, The Annunciation, the Birth of Christ, Christ brought to the Temple; 9, The Flight into Egypt, the Holy Family, Christ and the Woman of Samaria; 10, Christ Stilling the Tempest, the Good Samaritan, the Lord of the Vineyard and Labourer; 11, The Return of the Prodigal Son, Trial of Peter's Faith, Herodias with the Head

of John the Baptist; 12, The Crucifixion, the Women at the Sepulchre, the Morning of the Resurrection, the Disciples at Emmaus. Per box,30 00

364. SUPERIOR VIEWS, ILLUSTRATIVE OF SCRIPTURE HISTORY, LANDSCAPES, PORTRAITS, ETC.

In single Sliders, on glasses 2½ inches diameter.

Rebecca at the Well; Petraea; Valley of Sichem; Beirout and Lebanon; Tyre; Lake of Tiberias; Vale of Nazareth; Mount Zion; Balbec; Philadelphia, (Asia Minor); Cyprus; Garden of Gethsemane; Damascus; Shrine of the Nativity; Tadmor in the Desert; Hebron; Tomb of Absalom; Pool of Hezekiah; Father Matthew; Sand Storm in the Desert; Bay of Naples; Archbishop Laud; Stonehenge, (England;) John Knox; John Calvin; Sir Thomas Moore; Lake of Como; Chapel in the Keep of Dover Castle, each,	4 50
Isola Bella; Boiling Springs, (Iceland;) Lake of Como; Red Sea at Suez; Rapids of Niagara; Royal Exchange, (London;) Castle of Chillon; Bank of England; Dropping Well; Whirlpool; Voltaire's Tomb at Paris; Holyrood Abbey; Louis Philippe's Land; Snow Bridge; Demosthenes; St. Winifred's Well; Edinburgh; Porte St. Denis, (Paris;) Water Spout at Sea; William Penn; Ruins of Waverley Abbey; William Tell's Chapel; Jerusalem, from Hill of Evil Council; Patmos; Boaz and Ruth; Sidon; Jacob's Well at Sychar; Beth'lehem; Antioch; Damascus; Corinth; Convent of St. Catharine; Ravine at Edom; Sardis; Entombment of our Saviour; Jerusalem; Jaffa; Syracuse; Fiery Furnace; Mount Zion; Egypt; Nile and Pyramids; Christ before Pilate; Moses and the Burning Bush; Babylon and the Euphrates; Death of Abel; David before Saul; Peaceable Kingdom; Ephesus; Joppa; Plain of Jezreel; Cana of Galilee; Dead Sea; Abraham offering Isaac; Alexandria, (Egypt;) Thyatira; Pergamos; Lake of Tiberias; Sitting Statues, Thebes; Conversion of St. Paul; Baalbec; Tarsus; Valley of Jehoshaphat; Pool of Siloam; Tiberias; Samaria; Birth of Christ; Smyrna; Cedars of Lebanon; Plain of Rhah; Laodicea, each,	4 25
Boppard on the Rhine; Smuggler's Home; All Saints' Church, (Sussex;) Brougham Hall; Christian Church, Tortosa; Saint Adolph's; Kit's Cotey House; Southbrough; Landgate; Winchelsea; Ruins of Iona; Castle Coch; Cardiff, (Wales;) Linchiden College, (Scotland;) Map of the Western Hemisphere; Map of the Eastern Hemisphere; Falls of the Clyde; Katz on the Rhine; Kirkstall Abbey; View near Tunbridge Wells; Ancient Crypt, (London,) each,	2 75
Christ blessing little Children,	5 25
Interior of Convent of the Nativity,	5 00
Joseph Sold by his Brethren,	5 00
Niagara Falls, (medium execution,)	1 25

365. SUPERIOR VIEWS, ILLUSTRATIVE OF SCRIPTURE HISTORY,
LANDSCAPES, PORTRAITS, ETC.

In single Sliders, on glasses 3 inches diameter.

Mercury and Pandora,	4 75
Egyptian Zodiac,	7 50
Slider for Representing Snow,	3 75
Jacob Attending his Flock,	6 25
Christ, (portrait,)	9 00
Joseph sold by his Brethren,	7 50
“ before Pharaoh,	8 00
Massacre of the Innocents,	7 00
Portrait of Galileo,	6 00
Eastern Wine Press,	6 25
Benjamin Franklin,	6 50
Piazza of Congress Hall, Saratoga,	5 50

366. SUPERIOR VIEWS, ILLUSTRATIVE OF SCRIPTURE HISTORY,
LANDSCAPES, ETC.

In single Sliders, on glasses 3½ inches diameter.

Sphinx, (Egypt;) Waiting Place of the Jews at Jerusalem; Map of Jerusalem, (very good;) Philadelphia, (Asia Minor;) Fron- tier of Egypt; Temple of Dendera; Mount Hor; Approach to Petrea; Mount Tabor; Mount Sinai; Temple of Edfou; Luxor; Apostles' Fountain; Memnonium, (Thebes;) Sphinx and Pyramids: El Dier; Pyramids; Der el Kamer; Plain of el Rah; Approach to Karnak; Solomon's Pools; St. Ruth's Priory; Fountain Rue Richelieu, Paris; Ducal Palace, (Venice;) Temple of Peace, (Rome;) Yanina, (Greece;) Tiber; Church of the Knights' Templars at Luz; Thames Tunnel; Falls of Cyndus, (Syria;) Seal Hunting; Ruins of Andernach, on the Rhine; The Rialto, (Venice;) Isola Bella, Lake Como; Laneck Castle, on the Rhine; Windsor Castle; Bacharach, on the Rhine; Venice; Zurich; Naples; Castle of Thurnburg; Mount Blanc; Chorr Mountains; Porte St. Denis, (Paris;) Ghigi Palace, (Italy;) Corn Market, (Paris;) Alha- ma, (Gibraltar;) Castle of Spielz, on Lake Thun; Icebergs; Frostberg, (Switzerland;) St. Paul's, (London;) Prairie on Fire; Hall of Waters, (Constantinople;) Spoleto; Knight Street, (Rhodes;) A Dead Camel in the Desert; Snow Bridge; Lake of Como; Inverary Castle; Tell's Chapel, (Lake Lu- cerne;) Tintern Abbey, each,	4 50
Interior of Winchester Cathedral—the Choir,	6 00
“ Durham “ the west end,	6 00
“ the Palace of Eyoub—very fine,	6 00
Interior of Henry 7th Chapel, Westminster Abbey—a very elaborate view,	9 00
Interior of Santa del Carmina,	9 00
Interior of the Great Exhibition, London—very elaborate,	10 50
The words “Good Night,” in a wreath of Roses, for closing the exhibition,	3 50

367. PAINTINGS IN PAIRS OR SETS, FOR DISSOLVING VIEWS.

Any two paintings of the same size will answer for Dissolving Views, care being taken that there is a general likeness of light and shade; a very light object in the centre of one painting, and a very dark object in the centre of the other, will not produce a fine effect.

The following are specially selected in Sets, and are on glasses $3\frac{1}{2}$ inches diameter:

Storm at Sea—Calm, Wreck, Life-Boat, Lightning—4 s'iders,	15 50
Ship on Fire—in full sail, on fire. "A sail, a sail," Life Boat—4 sliders,	15 50
Vesuvius in Eruption—Day, Night, Smoke and Flame, Lava, &c.—3 slides	15 00
Water Mill, North Devon—Summer, (wheel in motion,) Winter, Moonlight and Illumination—3 slides,	14 50
Mosque of Omar—Day, Night, Moonlight, Windows Illuminated—3 slides,	11 00
Poppleton Church—Summer, Winter, Night, Illuminated Clock—3 slides,	11 00
Rome, St. Peter's, Vatican, St. Angelo—Day, Night, Illumination with Fire-works—3 slides,	11 00
Niagara—Day, Moonlight, and revolving slide, (water in motion)—3 slides,	11 00
Snowdon—Summer, Winter, Moonlight, Cottage lit up—3 slides,	11 00
Scene in Yorkshire—Summer, Winter, Rainbow—3 slides,	10 00
Tower of London—Moonlight, Conflagration—2 slides,	10 00
Esquimaux Village—Snow Huts, different Auroras—3 slides,	8 50
Scene in Cumberland—Summer, Winter—2 slides,	9 00
Loch Lomond—Day, Moonlight—2 slides,	9 00
Lake Geneva—Summer, Winter—2 slides,	9 00
Bay of Naples—Day, Night—2 slides,	9 00
Castle of Chillon—Day, Moonlight—2 slides,	9 00
Mill at Lungren—Summer, Winter—2 slides,	9 00
Mill at Lynmouth, " " 2 " "	9 00
Burns' Cottage—Summer, Winter, 2 " "	9 00
Birth-place of Burns—Summer, Winter—2 slides,	9 00
Birth-place of Shakspeare—Summer, Winter—2 slides,	9 00
Old Road and New Road—Stage Coach, Locomotive—2 slides,	9 00
Napoleon—Powerful, at the head of his Army; Powerless, at St. Helena—2 slides,	9 00
British Oak—Oak Tree, Britannia and Sailors—2 slides,	9 00
Newby Abbey—Summer, Winter, 2 " "	9 00
Black Rock—Day, Sunset, moveable, 2 " "	7 00
Katz on the Rhine—Day, Night, Lightning—2 slides,	7 00
St. Paul's, London—Night, Moon rising, 2 " "	7 00

368. THE CHROMATROPE, OR ARTIFICIAL FIRE-WORKS.

These Slides are singularly curious, the effect being very similar to that of the Kaleidoscope. The pictures are produced by brilliant designs being painted upon glass, and the glasses made to rotate in different directions. An endless variety

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MAGIC LANTERNS AND SLIDES.

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of changes in the patterns are caused by turning the wheel, sometimes *quickly*, then *slowly*; *backward* and *forward*. There are 50 different patterns, $2\frac{1}{8}$ inches diameter, each, 3 25

TEMPERANCE AND MORAL SLIDES.

- 369 Drunkard's Progress, 10 paintings, on single Slides, the glasses 3 inches in diameter, packed in a box. Slider No. 1.—Teetotaler; 2, Glass with a Friend; 3, Glass to keep the Cold Out; 4, Glass too Much; 5, Drunk and Riotous; 6, Jolly Companions every one; 7, Forsaken by Friends; 8, Poverty and Disease; 9, Desperation and Crime; 10, Suicide, 15 00
- 370 Progress of Intemperance, 6 paintings, on single slides, the glasses 3 inches in diameter, packed in a box. Slider No. 1.—Dizzy—"I feel a little dizzy;" 2, Foolish—"Take a Bumper and Try;" 3, Evidently Inebriated—"Waiter, what have I to pay?" 4, Considerably Intoxicated—"I say, Jack, which is my way to Port?" 5, Uncommon Drunk—"Have you seen any thing of a Shoe?" 6, Indisputably Dead Drunk, 9 00
- 371 The Bottle—from Cruikshank's designs—8 sliders, 45 00
- 372 Scenes of Intemperance, 16 paintings, on single slides, the glasses 3 inches in diameter, packed in a box—with a descriptive work published by the American Sunday School Union, 24 00
- 373 Bad Boy's Progress, 14 paintings, on single slides, the glasses 3 inches in diameter, packed in a box—with a descriptive work published by the American Sunday School Union, 20 00
- 374 Temperance Emblems, 4 paintings, on single slides, the glasses 3 inches in diameter; for the use of the Temple of Honor, 6 75

NATURAL HISTORY SLIDES.

- 375 Single Views, on glasses 3 inches in diameter—as the Elephant, Giraffe, Tiger, Bear, Hippopotamus, Lion, Hyena, &c., each, 1 37

LONG SLIDES OF VARIOUS HUMOROUS SUBJECTS.

376. The Old Man and his Ass, or the folly of trying to please every one—8 views on two slides, 6 75
- 377 Slides with 3 to 6 paintings on each, various humorous subjects, per slide, 1 25 to 2 00
- 378 House that Jack Built—10 paintings, on 2 slides, 4 50
- 379 " " " " 10 " 3 " superior, 10 00
- 380 SET OF BOTANICAL SLIDES. 14 slides—50 views—in a box, 29 00

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MAGIC LANTERNS AND SLIDES.

381. MOVING DIORAMIC SLIDES.

Serenade—a Castle on a Lake, a Boat moves towards the

Castle and a Lady appears on the Balcony—very good,.....	5 50
Noah entering the Ark,.....	5 00
Israelites crossing the Red Sea,	5 00
Burning of the Steam Ship Missouri—boats passing,.....	5 00
Mount Etna—Boats and Vessels moving past,	5 00
Downton Castle “ “ “	2 50
Pembroke “ “ “	2 50
Holyrood Chapel—People and Horses passing,.....	2 50
Ruins of a Convent “ “ “	2 50
Smugglers' Cave—Ships, Boats and Men passing,.....	2 50

382 PUBLIC BUILDINGS AND VIEWS—in 4 sliders, containing 12 views of medium execution, on glasses $2\frac{1}{2}$ inches diameter—St. Paul's; Melrose Abbey; Southwark Bridge, London; Westminster Abbey; Niagara Falls; Waterloo Bridge; St. Peter's, Rome; Fingal's Cave; Birth-place of Shakspeare; St. Michael's, England; Hotel des Invalides, Paris; Giant's Causeway, per set, 9 00

383. COSTUMES OF DIFFERENT COUNTRIES.

On glasses $2\frac{1}{2}$ inches diameter.

Costume of China—4 slides, 13 views,	6 75
“ Egypt, 3 “ 10 “	5 00
“ Turkey, 3 “ 11 “	5 00
“ England, 4 “ 12 “	6 75
Ancient Costume, 6 “ 23 “	8 75

384. LEVER SLIDERS, GIVING NATURAL MOTIONS TO THE FIGURES

On glasses $3\frac{1}{2}$ inches diameter.

Stag moving his Horns; Horse Drinking; Shoe Black; Quarryman Breaking Stone; Washerwoman; Ship at Anchor; Shipwreck; Horse and Groom; Phrenological Lecture, each,.....2 50

And the following of better execution, on glasses $2\frac{1}{2}$ inches diameter.

Horse Drinking; Old Man Begging; Squirrel; Blind Fiddler; Pot House Effects; Ship at Anchor; Cow Drinking; Swan Swimming, each,3 50


385. COMIC SLIP SLIDES.

The price regulated by the style of execution.

Impudent Monkey; Cook and Pig's Head; Rum and Clown; Dancing Sailor; Cat and Mouse; Woman with too much Tongue; Tailor Sewing; Cow Tossing a Dog; Man and Ass, (two Donkeys;) Grim Death; Miser; Good Night, (man takes off his hat;) Sailor and Pig; Clown falling to Pieces; Fiery Beer; Gymnastics; Lamp Black; Turks' Caps, (a flower

changing to a Turk's head;) Alarming; Tailor and Cabbage; Woman Snuffing; Child Jumping a Rope; Woman and Wig; Child Listening; Opening Rose; Clown; Naval Engagement; Blacksmith; Tight Boot; A Friend; Lion and Horse; Death on Pale Horse; Cobbler; Dentist; Active Monkey; Clown Performance; Bowl of Punch; Growing Nose; Jim Crow; Barber; Chinese Tumblers; Mer.in's Cave; Spectacles; Chair Performance; Tailor and Goose; Storm at Sea; Cupid; Jolly Tar; Horsemanship; Water Cure; Crossing the Alps; Black Draught, (man taking physic;) Bottled Porter; A pair of Snuffers, (two men taking snuff;) Harlequin; Dancing Dog; Albert's Patent Hat- Robber; Kitchen Plant; Cauliflower changing to Negro Woman's Head; Cupid and Rose; A Pear, (pair;) British Tar; Stubborn Ass; Boy Stealing Jam, each,	1 00
Clown and Goose; Dentist; Monster throwing his Head away; Tythe Pig; Sailor and Pig; Risley and Son; Chinese Tumblers; Chameleon; Barber; Cobbler; Snuffing; Blacksmith; Growing Nose; Bowl Performance; Globe Performance; Birth of Cupid; Tailor and Cabbage; Water Drinker; Turks' Caps; Lamp Black; Bottled Porter; Navigation; Boy taking Portrait; Spectacles; Tight Boot; Old Head on Young Shoulders; Carnation; Rat Catcher, each,	2 00
Lion and Horse; Peacock; Good Night, in a wreath of Roses; Good Night, (a man taking his hat off;) Banjo Player; Don't you wish you may get it? Got it, no Mistake; Insect Changes; Veneration; Joy; Fear; Despair; Scorn; Terror; Revenge; Horsemanship; Black Orator; Greenwich Pensioner; Neptune; Cupid and Rose; Fairy drawn by Peacocks; Dentist; Growing Nose; Skull; Blue Beard; Espy's Chimney; Pulling off Boots; Punch as Hamlet; Water Drinker; Rat Catcher, each,	2 25
395 Wicks for the Solar Lamps, per dozen,	12 cts.
396 Glass Chimneys for " each,	10 "
397 Scissors, with Shield, expressly for trimming the Solar Lamps,	37 and 62 "

All the slides marked as sets, or in boxes, are only sold in that way, and not separated. All the Diagrams enumerated can be used in any of the Lanterns described. The views of $3\frac{1}{2}$ inches in diameter are more suitable for the Dioptric or Phantasmagoria with four inch condensers; if used in a lantern with smaller condensers, a portion of the painting is lost.

 Persons ordering from the above list are recommended to name more Slides than they wish, so that we can make a selection from them to the amount they may desire, for it will occasionally happen, that we have not certain subjects on hand; our stock, though very large in the aggregate, cannot be large of every kind.

34 DIRECTIONS FOR THE MAGIC LANTERN.

General Directions

FOR THE USE OF THE MAGIC LANTERN.

The following directions are intended merely as a guide to those unacquainted with the management of the Magic Lantern. Practice will soon suggest to the operator, many methods of rendering the Exhibition a pleasant and profitable amusement.

The Lamp should be carefully trimmed, and filled with the best oil, the flame to stand as high as possible so that it does not smoke. The greatest cleanliness should be observed with the Lamp, a new wick used for each exhibition, and when not in use the oil should be drained out.

All the Lenses should be taken out previous to each Exhibition, and carefully wiped with a soft muslin or linen cloth.

The room being fully darkened, the Lantern should be placed upon a table, about six or eight feet from a white wall, or a white sheet suspended on a wall; or it is frequently preferable to make use of a muslin screen stretched on a frame, the Lantern being on one side and the spectators on the other; and it is recommended to wet the screen that it may be drawn tighter, and also rendered more transparent.

The Lamp having been lighted and placed in the Lantern, close the door of the Lantern and move the Lamp, by means of the brass rod projecting in front, until a perfect circle is formed on the wall or screen, when the Lamp is known to be in its proper position: much depends upon this.

The Sliders are placed in the slit in front of the Lantern, with the picture inverted, and the focus adjusted by the rack work. The farther the Lantern is from the wall or screen, the larger will be the image, but the illumination will not be so perfect as when closer.

TO PRODUCE THE PHANTASMAGORIA EFFECT.

The operator should be on one side of a screen as already described, and the spectators on the other; taking the Lantern under his left arm, he should go up pretty close to the screen, and adjust the focus with his right hand, the image of course will be very small; he must then walk slowly backward, at the same time adjusting the focus. As the image *increases* in size, it will appear to the spectators to be coming towards them; and then again let him walk up towards the screen, thus *diminishing* the image, and it will appear to them as if receding. The screen not being seen, the image appears to be suspended in the air, and the deception is complete, even to those accustomed to the exhibition.

DIRECTIONS FOR THE MAGIC LANTERN. 35

The effect is much increased by gradually closing down the brass shutter in front of the lenses, as the operator walks up towards the screen. It has the appearance of diminishing the quantity of light, and gives a more perfect *realization* that the image has actually removed from the spectators; of course, it must be gradually raised upward, as the operator is walking back from the screen.

Sliders producing the best Phantasmagoria effect, are those containing but one or two figures, and all the rest of the glass painted black; such, for instance, as some of the Comic Slip Slides, No. 385, on page 32 of the Catalogue.

TO PRODUCE THE DISSOLVING EFFECT,

Requires two Lanterns arranged on a stand, as shown in the engraving on page 24. The Lanterns each turn upon a pivot in front, and are secured at the rear with set-screws, by which means they are firmly fixed in their places; it being necessary for the success of the illusion that they do not change their position during the whole exhibition. Incline both Lanterns apart at the rear to such an angle, that the circle of light from each shall fall precisely upon the same spot on the screen; then give the set screws a turn, which will retain the Lanterns at the angle required. There is in front of the pair of Lanterns a diamond-shaped shade, which slides in a groove, and is so proportioned that when the wide part is in front of the tube of *one* Lantern, the pointed end will not quite reach to the front of the tube of the *other* Lantern. Having placed a slider in each Lantern, slide the shade along the groove, by the hand, alternately from right to left and left to right; and it follows, that as soon as the shade begins to cover the image proceeding from one Lantern, a corresponding portion of the image proceeding from the other Lantern is thrown upon the screen. The movement should be slow and regular, and the paintings will imperceptibly and beautifully dissolve, the one into the other.

It is of much consequence that the paintings are placed precisely in the centre of the Lenses, so that they may fall directly upon each other when the change is made; they should also be of the same size, a 3 inch Slider, for instance, will not dissolve *handsomely* in combination with a $3\frac{1}{2}$ inch Slider.

TO OPERATE WITH THE DIOPTRIC LANTERN,

Demands more practice and more skill than with the preceding, but from the perfection of the apparatus the effects are far more brilliant.

The illuminating power is obtained by forcing a jet of oxygen gas through the centre of the flame of the Lamp, on to a lime ball suspended by a Platina wire above the apex of the flame.

Oxygen gas is not combustible, and cannot therefore be attended with danger; it has no smell, and is the vital principle of the atmos-

36 DIRECTIONS FOR THE MAGIC LANTERN.

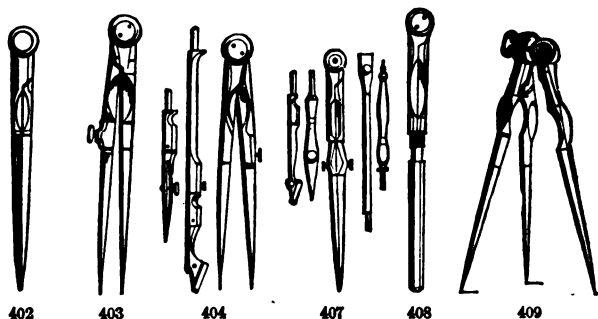
phere. To make it, it is only necessary, *first*, to see that the retort is clean, or at least free from coal, oil, or any combustible substance; (after making the gas a residuum is formed at the bottom of the retort, which should be at once removed.) *Secondly*, put into the retort eleven ounces of chlorate of potash, and two ounces of black oxide of manganese, in powder, well mixed together, and lute round the cover with putty or clay; screw it down tightly, put it on a common kitchen fire, and connect it, by means of the lead pipe, with the wash bottle, which should be half filled with water. If the fire is brisk, and the materials of good quality, bubbles will soon rise through the water in the wash bottle; when they come fast and regularly without intermission, allowing all atmospheric air to be expelled, connect the wash bottle with the gas bag by the flexible tube, and in about ten minutes the bag will be filled with the purest oxygen gas. When the bubbles cease, or when the bag is full, turn the stop cock to prevent gas escaping; and *immediately* unscrew the tube from the wash bottle, and take the retort off the fire without loss of time.

When required for use attach the tube from the gas bag to the Lamp, previously carefully trimmed, and apply a pressure of about fifty pounds on the bag. The lime ball should be suspended half an inch above, and exactly over the centre of the oxygen tube; the wick of the Lamp should not be raised too high, but just enough to produce as much smoke as will be entirely absorbed by the gas. The gas should not all be turned on, but the supply regulated by the small stop cock so as merely to allow sufficient to pass to produce perfect brightness; this should be particularly attended to, for if too much is turned on, the lime ball is cooled, gas is wasted, and the exhibition proves a failure. With judicious management an intense and uniform brightness may be kept up for over two hours, with a consumption of less than one and a half cubic feet of gas, and two ounces of oil, per hour.

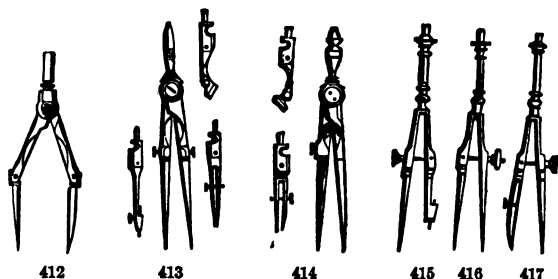
Experience will soon enable those using the instrument to manage the levers and prisms, and with facility to produce all the effects desired. Perfect coincidence of discs is obtained, *laterally*, by moving the prism on its hinged joint, and *perpendicularly*, by moving round the tube containing the shutter.

A convenient stand for the Lantern, to run upon castors, about four feet high and twenty inches square, could be readily made; the gas bag placed at the bottom, and a shelf above for placing the sliders required for exhibition. Where portability is an object, this could be made to be taken apart when not in use, and occupy a very small space.

Mathematical Instruments.



400. Dividers, Brass; brass joints, rivet heads; 5 inches,12
 401. Dividers, Brass; steel joints, screw heads; 5 in., 25; 6 in.,...37
 402. Dividers, Brass; Fine; steel joints, turned cheeks: 4 in.,
 62 cts.; 5 in., 75 cts.; 6 in., 87 cts.; 7 in., 1 25; 8 in.,.....2 00
 403. Dividers, Brass; Fine; hair spring, steel joints, turned
 cheeks; 4 inches, 1 00; 5 in., 1 37; 6 in., 1 75; 7 in., ...2 25
 404. Dividers, Brass; medium quality, with pen, pencil point,
 and lengthening bar, 4 in., 75 cts.; 5 in.,87



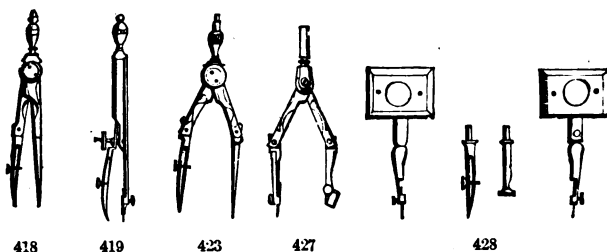
405. Dividers, German Silver; fine finish; 4 in., 75 cts.; 5 in.,
 87; 6 in., 1 00; 7 in., 1 25; 8 in.,2 50
 406. Dividers, German Silver; fine finish; hair spring; 4 in.,
 1 50; 5 in., 1 75; 6 in., 2 00; 7 in.,2 50
 407. Dividers, German Silver; fine finish; with pen, pencil
 point, lengthening bar, and needle point, 6 inches,3 25
 4

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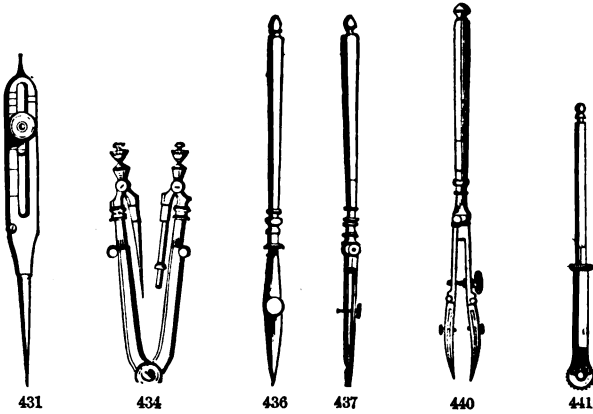
MATHEMATICAL INSTRUMENTS.

408. Dividers, German Silver; fine finish; with shield for pocket,	2 00
409. Dividers, German Silver; fine finish; three legged,	2 75
410. Dividers, Bisecting; Brass,	2 00
411. " " German Silver,	2 50
412. Dividers, German Silver; fine quality; with joint in each leg; 3 inches,	1 75
413. Dividers, German Silver; fine quality; with pen, pencil and needle point; 3 inches,	2 25
414. Dividers, Brass; medium quality, needle point, with pen, and pencil point; 3 inches,	1 25
415. Bow Pencil, solid steel,	1 75
416. Spacing Dividers, solid steel,	1 50
417. Bow Pen, solid steel,	1 75
418. Bow Pens, Brass,	50

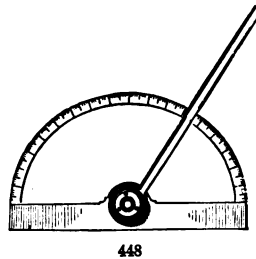
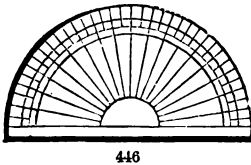
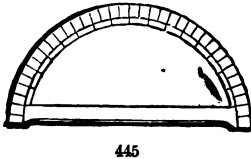


419. Bow Pens, Brass; needle point and adjusting spring,	1 25
420. Bow Pens, German Silver; needle point and adjusting spring,	1 50
421. Bow Pens, Brass; needle point, adjusting spring, and hinge to pen,	1 50
422. Bow Pens, German Silver; needle point, adjusting spring, and hinge to pen,	2 00
423. Bow Pens, German Silver; with joint in each leg,	2 25
424. Bow Pencils, Brass,	50
425. Bow Pencils, Brass; adjusting spring,	1 25
426. Bow Pencils, German Silver; adjusting spring, and needle point,	1 50
427. Bow Pencils, German Silver; joint in each leg,	2 25
428. Furniture for Beam Compass, Brass,	3 00
429. Furniture for Beam Compass, Brass; with adjusting screw,	3 75
430. Furniture for Beam Compass, German Silver; with adjusting screw,	5 50
431. Proportional Dividers, Brass; half divided,	1 75 and 2 25
432. Proportional Dividers, Brass; full divided,	7 50
433. Proportional Dividers, German Silver,	7 25 and 9 00
434. Pillar Compass, Brass,	5 75
435. Pillar Compass, German Silver,	6 75

436. Drawing Pen, German Silver; fine finish; hinge to pen,.....50
 437. Drawing Pen, German Silver; fine finish; hinge to pen,
 and protracting pin,62
 438. Drawing Pen, German Silver; fine finish; hinge to pen,
 and protracting pin; extra fine,.....1 25
 439. Drawing Pen, German Silver; fine finish; hinge to pen,
 German Silver points for red ink,75



440. Double Drawing Pen, or Railroad Pen, for parallel lines;
 German Silver; fine finish,2 50
 441. Roulette, for dotting lines,62



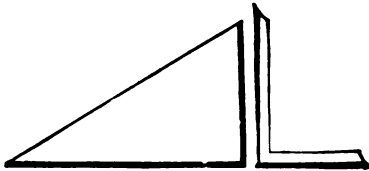
442. Roulette, with 6 wheels, a good article,3 50
 443. Map Perambulator; for measuring the length of curved
 lines, rivers, railroads, etc., on maps,1 50

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40

MATHEMATICAL INSTRUMENTS.

444. Pencil Sharpener; cuts neatly, without soiling the fingers, 1 00
 445. Protractors, Half Circle, Brass,25, 50, 75 and 1 00
 446. Protractors, Half Circle, Transparent Horn, 25, 87, 60 and 75
 447. Protractors, Half Circle, German Silver, 75, 1 75, 2 00
 and8 00
 448. Protractors, Half Circle, German Silver; horn centre, and
 moveable arm,4 00, 5 00, 7 00, 10 00 and 12 00
 449. Protractors, Whole Circle, German Silver; horn centre,
 and moveable arm,7 00, 8 00, 11 00, 13 00 and 16 00
 450. Protractors, German Silver; horn centre, and moveable
 arm, with vernier,10 00, 12 00 and 18 00
 451. Protractors, Brass, with steel arm 24 to 30 inches long, 7 50



452

456



457

452. Triangles, White Wood,25
 453. Triangles, Ebony,37 and 75
 454. Triangles, framed of 3 kinds of wood,75
 455. Triangles, German Silver,2 00
 456. Squares, German Silver,50
 457. Irregular Curves; various patterns; white wood, ...25 and 37
 458. Irregular Curves; various patterns; Ebony,50



459



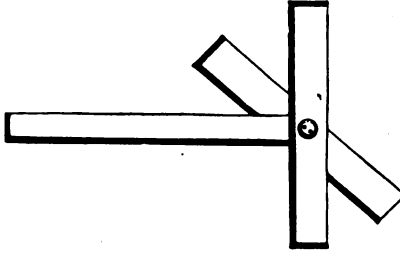
461

459. Engineer's Tacks, for fastening paper to the drawing
 board; Brass, per dozen,25 and 50
 460. Engineer's Tacks, for fastening paper to the drawing
 board; German Silver, per dozen,60 and 75
 461. Horn Centres, to prevent the dividers from marking the
 paper, each,18
 462. Parallel Rules, Ebony; Brass mounted; 6 in., 37; 9 in.,
 62; 12 in., 75; 15 in.,1 00
 463. Parallel Rules, Ebony; German Silver mounted; 6 in.,
 50; 12 in.,1 00
 464. Parallel Rules, Ivory; German Silver mounted; 6 in.,1 25
 465. Parallel Rules, Brass; 6 in., 1 00; 9 in., 1 75; 12 in.,
 2 50; 15 in.,3 00
 466. Parallel Rules on Rollers, Brass; 9 in., 4 25; 12 in.,
 5 75; 15 in.,7 25
 467. Parallel Rules on Rollers, Ebony; Brass mounted; 12
 in., 2 62; 15 in., 3 87; 18 in.,4 00

468. Parallel Rules on Rollers, Ebony; Ivory graduated edges;
Brass mounted, 12 in., 4 25; 15 in.,5 75
469. Parallel Rules on Rollers, Ebony; Ivory graduated edges;
German Silver mounted; 12 inch.4 75
470. T Squares, Wood, with arm 18 to 30 inches long,75
471. T Squares, Wood, with arm 18 to 30 inches long, and
swivel joint,1 25
472. T Squares, Wood, with arm 18 to 30 inches long, swivel
joint, and brass bevelled edge,1 75



468

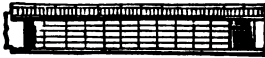


471



473

473. Pentagraph, White Wood,2 50
474. Pentagraph, Ebony; accurate,14 00
475. Pentagraph, Brass; accurate,22 00



476



477



481

476. Ivory Scales, 6 inch, same as in school cases of instru-
ments, each,62
477. Ivory Scales, 12 in. graduated on edges, 20 and 40, 30
and 50, 40 and 60, each,3 00
478. Ivory Scales, architectural, 12 in., each,3 00 and 4 00
479. Ivory Scales, 12 in., 16 scales off the edge in 10ths or
12ths, each,3 00 and 4 00
480. Ivory Scales, 12 in., diagonal scales, each,4 75 and 6 50
481. Ivory Protractors, 6 in., same as in school cases of in-
struments, each,1 00
482. Ivory Protractors, 6 in., for engineers, finely graduated,
each,2 00 to 3 50

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42


MATHEMATICAL INSTRUMENTS.

483. Ivory Protractors, 6 in., extra width, $\frac{1}{2}$ degree for engineers, each,5 00
484. Ivory Protractors, 12 inch, extra width, for engineers, very fully graduated, each,8 25 and 9 25
485. Boxwood Scales, 6 in., same as in school cases of instruments,25
486. Boxwood Scales, 12 in., graduated on edges, 20 and 40, 30 and 50, 40 and 60,1 00
487. Boxwood Scales, 12 in., architectural,1 50
488. Boxwood Scales, 12 in., 16 scales off the edge, in 10ths or 12ths,1 50
489. Boxwood Gunter's Scales, 12 in.,37 and 75
490. Boxwood Gunter's Scales, 24 in.,75

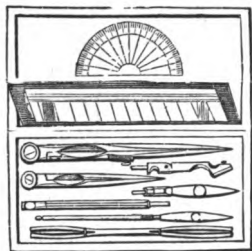


491

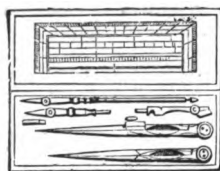
491. Boxwood Scales, Triangular; 12 in., 6 edges, 10, 20, 30, 40, 50 and 60 parts to the inch,2 50
492. Boxwood Scales, Triangular; 12 in., architectural, 6 edges, 12 scales, $\frac{1}{4}$ to 4 inches,2 50
493. Boxwood Scales, Triangular; 12 in., 6 edges, 16 scales off the edge in 10ths or 12ths,2 50
- *.* A new and very convenient article.
494. Steel Scales; 12 in., 4 edges, 20, 30, 40 and 50 parts to the inch,1 50
495. Steel Scales; 12 inches, 4 edges, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$, and inch in 12ths,1 50
- *.* Accurate and durable, specially adapted for Machine Shops.
496. Paper Scales, (Holtzapffel's,) 19 in. long, for engineers, per set of 6 scales, each,2 00
- Series A.; $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{2}$, 3 inches to the foot.
- Series B.; $\frac{1}{8}$, $\frac{3}{8}$, 2, 4, 6 inches to the foot, and a line of inches and eighths.
- Series D.; $\frac{1}{16}$, $\frac{3}{16}$, $\frac{5}{16}$, $\frac{7}{16}$ of an inch to the foot, a line of inches and twelfths, and the English decimal foot.
497. Paper Scales, (Holtzapffel's,) 19 in. long, for engineers, different graduations from the above, separate, each,37
498. Steel Straight Edges; 24 in., 1 75; 30 in., 2 25; 36 in.,3 00
499. Comparative Scale of Measures of different Countries; Boxwood, 17 inches long, $4\frac{1}{2}$ inches wide, containing the following measures of length: Swedish, Turkish, Bavarian, Spanish, Portuguese, Moscow, Russian, Amsterdam, German, Austrian, Italian, Hanoverian, French foot, French metre, English,5 50

 For List of Books, see last page of Catalogue.

Cases of Brass Instruments for Schools.

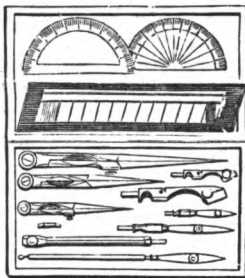


500



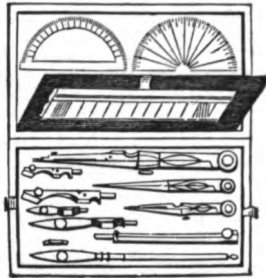
504

500. Wood Box; Pair $5\frac{1}{2}$ inch Dividers, with pen, pencil, and bar; Pair 4 inch Dividers; Drawing Pen; Horn Protractor; Boxwood Scale,1 75
501. Same as No. 500, with addition of Parallel Ruler,2 00
502. Wood Box; Pair $5\frac{1}{2}$ inch Dividers, with pen, pencil, and bar; Pair 4 inch Dividers; Drawing Pen; Horn Protractor; Ivory 6 inch Scale,2 00
503. Same as No. 502, with addition of Parallel Ruler,2 25
504. Morocco Box; Pair $5\frac{1}{2}$ inch Dividers, with pen, and pencil; Pair 5 inch Dividers; Drawing Pen; Ivory Protractor Scale,2 50

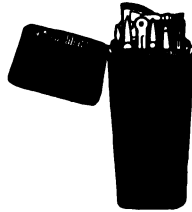


505

505. Wood Box; Pair 6 inch Dividers, with pen, pencil, and bar; Pair $4\frac{1}{2}$ inch Dividers; Pair $3\frac{1}{2}$ inch Dividers, with pen, and pencil; Drawing Pen; Brass Protractor; Horn Protractor; Ivory 6 inch Scale,3 00



506



513

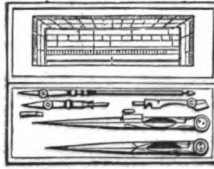
506. Wood Box, with the Instruments set in a Tray, so that Colours, etc., may be put below:—Pair 6 inch needle point Dividers, with pen, pencil, and bar; Pair 4½ inch Dividers; Pair 3½ inch needle point Dividers, with pen, and pencil; Drawing Pen; Brass Protractor; Horn Protractor; Ivory 6 inch Scale,3 25
507. Same as No. 506, with addition of Parallel Ruler,3 50
508. Wood Box, with the Instruments set in a Tray, so that Colours, etc., may be put below: Pair 6 inch needle point Dividers, with pen, pencil, and bar; Pair 4½ inch Dividers; Pair 3½ inch needle point Dividers, with pen, and pencil; Spring Bow Pen, with needle point; Drawing Pen; Brass Protractor; Horn Protractor; Ivory 6 inch Scale,3 75
509. Same as No. 508, with addition of Parallel Ruler,4 00
510. Wood Box, with lock and key, the Instruments set in a Tray, so that Colours, etc., may be put below: Pair 6 inch needle point Dividers, with pen, pencil, and bar; Pair 4½ inch Dividers; Pair 3½ inch needle point Dividers, with pen, and pencil; Spring Bow Pen, with needle point; Drawing Pen; Brass Protractor; Horn Protractor; Ivory 6 inch Scale,4 25
511. Same as No. 510, with addition of Parallel Ruler,4 50
512. Same as No. 510, with addition of Pair of Proportional Dividers,6 00
513. Fish Skin Case; Pair 6 inch Dividers, with pen, pencil, and dotter; Pair plain Dividers; Drawing Pen; Brass Protractor; Parallel Rule; Boxwood Scale,2 50
514. Same as No. 513, with Ivory 6 inch Scale in place of Boxwood Scale,2 75

Cases of Fine German Silber Instruments,

FOR ENGINEERS, ARCHITECTS, AND MACHINISTS.

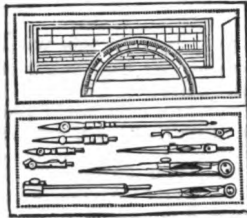
All these Instruments are with Steel Screws and Hinges to the Pen.

525. Morocco Box; Pair 3 inch Dividers, with pen, pencil, needle point, and bar; Pair 3 inch plain Dividers; Drawing Pen; no Scale or Protractor, .. 3 75



525

526. Morocco Box; Pair 5½ inch Dividers, with pen, and pencil; Pair 5 inch Plain Dividers; Drawing Pen; Ivory Protractor Scale, 3 50
 527. Same as No. 526, with addition of lengthening Bar, 4 00



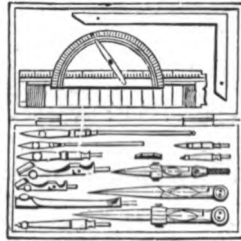
526

528. Morocco Box; Pair 5½ inch Dividers, with pen, pencil, and bar; Pair 5 inch Plain Dividers; Pair 8 inch Dividers, with pen, and pencil; Drawing Pen; German Silver Protractor; German Silver Square; Ivory 6 inch Scale, 6 50

McALLISTER & BROTHER,

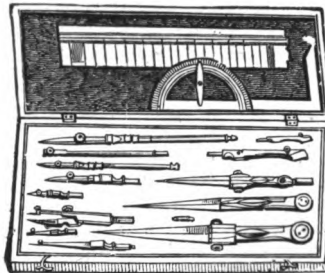
46

MATHEMATICAL INSTRUMENTS.



529

- 529.** Morocco Box; Pair 5½ inch Dividers, with pen, pencil, needle point, and bar; Pair 5 inch Plain Dividers; Pair 3 inch Dividers, with pen, pencil, and needle point; 2 Drawing Pens; German Silver Protractor; German Silver Square; Ivory 6 inch Scale,9 00
- 530.** Same Instruments as No. 529, in Polished Wood Box, ...10 00



531

- 531.** Polished Wood Box; Pair 5½ inch Dividers, with pen, pencil, needle point, and bar; Pair 5 inch Plain Dividers; Pair 3 inch Dividers, with pen, pencil, and needle point; Spring Bow Pen, with needle point; 2 Drawing Pens; German Silver Square; German Silver Protractor; Ivory 6 inch Scale,12 00
- 532.** Polished Wood Box; Pair 5½ inch Dividers, with pen, pencil, needle point, and bar; Pair 5 inch Plain Dividers; Pair 5 inch Hair Spring Dividers; Pair 3 inch Dividers, with pen, pencil, and needle point; 2 Drawing Pens; German Silver Protractor; German Silver Square; White Wood Triangle; Ivory 6 inch Scale,11 50
- 533.** Polished Wood Box; Pair 5½ inch Dividers, with pen, pencil, needle point, and bar; Pair 5 inch Plain Dividers; Pair 5 inch Hair Spring Dividers; Pair 3 inch Dividers with pen, pencil, and needle point; Spring

- Bow Pen, with needle point; 2 Drawing Pens; German Silver Square; German Silver Protractor; Ivory 6 inch Scale, 14 00
534. Same Instruments as No. 533, set in a Tray, and the box, much larger, with lock and key, thus affording space for extra Instruments or Colours, etc., 17 00
535. Polished Wood Box; Pair 5½ inch Dividers, with pen, pencil, needle point, and bar; 5 inch Plain Dividers; 5 inch Hair Spring Dividers; 3 inch Dividers, with pen, pencil, and needle point; Spring Bow Pen, with needle point; 2 Drawing Pens; Railroad, or Double Drawing Pen; German Silver Square; German Silver Protractor; Ivory 6 inch Scale, 17 00
536. Polished Wood Box, with Lock and Key, the Instruments set in a Tray; Pair 5½ inch Dividers, with pen, pencil, needle point, and bar, (the leg which holds the needle point has a hair spring movement;) 5 inch Plain Dividers; 5 inch Hair Spring Dividers; 3 inch Plain Dividers; 3 inch Dividers, with pen, pencil, and needle point, (the leg which holds the needle point has a hair spring movement;) Spring Bow Pen, with needle point; 3 Drawing Pens; German Silver Square; German Silver Protractor; Ivory 6 inch Scale; all the Pens have an extra thickness of Steel for the screws to pass through, 22 50



537


537. Polished Wood Box; Pair 5½ inch Dividers, with pen, pencil, needle point, and bar; Pair 5 inch Plain Dividers; Pair 5 inch Hair Spring Dividers; Pair 3 inch Dividers, with pen, pencil, and needle point; Pair 7½ inch Proportional Dividers; Spring Bow Pen, with needle point; 2 Drawing Pens; German Silver Square; German Silver Protractor; Ivory 6 inch Scale, 22 50
538. Polished Wood Box; Instruments same as No. 537, with addition of a Railroad or Double Drawing Pen, 25 00

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MATHEMATICAL INSTRUMENTS.

539. Polished Wood Box; Pair 5½ inch Dividers, with pen, pencil, needle point, and bar; Pair 5 inch Plain Dividers; Pair 5 inch Hair Spring Dividers; Pair 7½ inch Proportional Dividers; Pair 8 inch Dividers, with pen, pencil, and needle point; Spring Bow Pen, with needle point; 2 Drawing Pens; Double Drawing Pen; Roulette; Beam Compass Furniture; German Silver Square; German Silver Protractor; Ivory 6 inch Scale,38 00
540. Polished Wood Box, 18½ inches long, 6½ inches wide, with Lock and Key; the Instruments set in a Tray, leaving space below for Rules, etc.; Pair 6 inch Dividers, with pen, pencil, needle point, and bar; Pair 5 inch Plain Dividers; Pair 5 inch Hair Spring Dividers; Pair 7½ inch Proportional Dividers; Pair 8 inch Dividers, with pen, pencil, and needle point; Spring Bow Pen, with needle point; 3 Drawing Pens; Double Drawing Pen; Roulette; Beam Compass Furniture; German Silver Triangle; German Silver 5½ inch Protractor in half degrees; all the Pens have an extra thickness of Steel for the screws to pass through,50 00

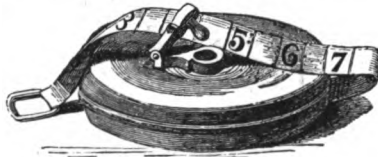
 We have also a variety of Swiss Instruments in cases, of very superior quality, the prices much higher than any of the preceding cases, say about double.

541. Empty Rosewood Box, 13½ inches long, by 6½ inches wide, with Tray, and Lock and Key,6 00 and 8 00

*. This is for the convenience of those who prefer selecting the Instruments separately, and thus arrange a case to suit themselves. The price of Box includes cost of fitting the Instruments in the tray lined with velvet.

Colours and Brushes furnished at the usual prices.

Tape Measures.

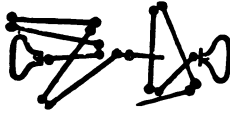


550. Linen Tape Measures; usual quality; Leather cases,
50 ft., 1 00; 70 ft., 1 12; 100 ft.,1 50
551. Linen Tape Measures; fine quality; Leather cases;
50 ft., 2 50; 70 ft., 2 75; 100 ft.,3 50
552. Linen Tape Measures; Vellum cases;
12 ft., 75; 24 ft., 1 00; 30 ft., 1 12; 50 ft.,1 75
553. Linen Tape Measures; Brass cases;
12 ft., 60; 24 ft., 87; 30 ft.,1 00
554. Metallic Tape Measures; Leather cases; a new article
made of Linen thread interwoven with fine brass wire,
not so liable to stretch as the usual Linen Tape, and
better calculated to withstand the effect of moisture;
50 ft., 2 87; 70 ft., 3 50; 100 ft.,4 75
555. Steel Tape Measures; all Steel; the most accurate porta-
ble measure; 33 ft.,8 00
556. Pocket Tape Measures; Brass cases, with spring; 3 ft.,50
557. Pocket Tape Measures; German Silver cases, with spring
and stop; 3 ft., 1 00; 4 ft., 1 12; 5 ft., 1 25; 6 ft.,1 37

Pocket Rules.

560. One Foot, 4 Fold; Boxwood,37 and 50
561. One Foot, 4 Fold; Boxwood; Brass edges,1 00
562. One Foot, 4 Fold; Ivory,75
563. One Foot, 4 Fold; Ivory; Brass edges,1 62
564. One Foot, 4 Fold; Ivory; German Silver mounted,87
565. One Foot, 4 Fold; Ivory; German Silver edges,2 00
566. Two Feet, 4 Fold; Boxwood,50
567. Two Feet, 4 Fold; Boxwood; Brass edges,1 37
568. Two Feet, 4 Fold; Ivory,2 00
569. Two Feet, 4 Fold; Ivory; German Silver mounted,2 50
570. Two Feet, 4 Fold; Ivory; finely graduated for
engineers,5 00 to 12 00
571. Two Feet, 2 Fold; Slide Rule, for carpenters, ...1 00 and 1 25
572. Two Feet, 2 Fold; Slide Rule, for engineers,1 50
573. Book explanatory of Slide Rule,15
574. Clinometer Rule, 1 foot, 2 fold; for measuring the angle
of veins in mines,3 50 to 6 00

Surveying Chains.




- | | |
|---|------|
| 590. 2 Pole Surveying Chain, 50 Links, round rings;
No. 7 wire, 2 00; No. 8 wire, 1 50; No. 9 wire, | 1 25 |
| 591. 4 Pole Surveying Chain, 100 Links, round rings;
No. 7 wire, 3 50; No. 8 wire, 2 50; No. 9 wire, | 2 00 |
| 592. 4 Pole Surveying Chain, 100 links, oval rings;
No. 7 wire, 4 00; No. 8 wire, 3 75; No. 9 wire, | 2 75 |
| 593. 50 Feet Surveying Chain, 50 Links, oval rings;
No. 6 wire, 3 75; No. 7 wire, | 3 25 |
| 594. 100 Feet Surveying Chain; 100 Links, oval rings;
No. 6 wire, 7 00; No. 7 wire, | 5 50 |

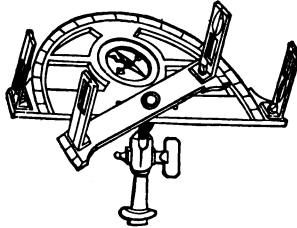
Surveying Compasses, etc.

- | | |
|--|-------|
| 600. Surveying Compass; 4 inch needle; 11 inch plate;
one straight level, | 25 00 |
| 601. Surveying Compass; 4½ inch needle; 12 inch plate;
one straight level, | 31 00 |
| 602. Surveying Compass; 5 inch needle; 14 inch plate; cir-
cular level and outkeeper, | 36 00 |
| 603. Surveying Compass; 5 inch needle; 14 inch plate; cir-
cular level, outkeeper, and nonius, | 46 00 |
| 604. Surveying Compass; 5 inch needle; 18 inch plate; 2
straight levels, and outkeeper, | 37 50 |
| 605. Surveying Compass; 5 inch needle; 18 inch plate; 2
straight levels, outkeeper and nonius, | 47 50 |
| 606. Surveying Compass; 5½ inch needle; 15 inch plate; cir-
cular level, and outkeeper, | 41 00 |
| 607. Surveying Compass; 5½ inch needle; 15 inch plate; cir-
cular level, outkeeper, and nonius, | 51 00 |
| 608. Surveying Compass; 6 inch needle; 16 inch plate; cir-
cular level, and outkeeper, | 46 00 |
| 609. Surveying Compass; 6 inch needle; 16 inch plate; cir-
cular level, outkeeper, and nonius, | 56 00 |
| 610. Surveying Compass; 6 inch needle; 15 inch plate; 2
straight levels, and outkeeper, | 42 50 |
| 611. Surveying Compass; 6 inch needle; 15 inch plate; 2
straight levels, outkeeper, and nonius, | 52 50 |

- 612. Theodolite or Transit Instrument, about 10 inch Telescope, 5 inch needle, and horizontal plate reading to minutes,140 00
- 613. Theodolite or Transit Instrument, with circle or arc for taking vertical angles, level, clamp, and tangent to axis,165 00 to 175 00
- 614. Large Transit Instrument, with long centres, needle 5 inch, plate 8 inches, with readings on silver to minutes; level to telescope, with clamp and tangent,190 00
- 615. Same as last, with circle, in addition for vertical angles, 210 00
- 616. Leveling Instrument, Telescope 15 to 18 inches,130 00
- 617. Burt's Patent Solar Compass,200 00
- 618. Leveling Rod, (sliding) and Targets,13 00
- 619. Slope Level,10 00 and 12 00

 The above are made to our order at the well known establishments of W. J. Young,—E. Draper,—or Knox & Shain,—are guaranteed to be thoroughly accurate, and are such as should be used by all surveyors. Inferior instruments (sold at almost one-half of the above prices,) are a frequent source of law suits and trouble: there should be a law requiring Surveyor's Compasses to be tested.

- 620. Quadrants,16 00 to 20 00
- 621. Sextants,50 00 to 70 00



630

- 630. Graphometer, or French Surveying Compass, with Ball, and Socket Joint; in Box,10 00 to 20 00
- 631. Compass with Sights; 2 to 3 inch diameter; in morocco cases,5 00, 6 00, 8 00
- 632. Compass with Sights; 4 to 6 inch diameter; with Ball, and Socket Joint, in Walnut box,10 00 to 20 00
- 633. Prismatic Compass with Sights, in Mahogany case,17 00
- 634. Azimuth Compass, with Sights, in Morocco case,21 00

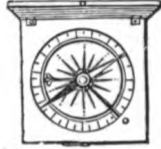
*. These Compasses, Nos. 630, 631, 632, 633, and 634, are an imported article, and we cannot warrant them to be accurate; they are either too cheaply made, or too small in size, but they may answer for many purposes.

52 POCKET COMPASSES, ETC.—SUN DIALS.

Pocket Compasses, etc.



651



655



657

650. Pocket Compass; Brass, without stop for the needle,.....50
 651. Pocket Compass; Brass; watch pattern; with stop, 75 and 1 00
 652. Pocket Compass; Brass; watch pattern; with stop, and
 agate centre,2 00
 653. Pocket Compass; Brass; with cover and stop $1\frac{1}{2}$ to 2
 inch diameter,1 50, 1 75, 2 00
 654. Pocket Compass; Gilt, watch pattern; with stop; ena-
 melled dial, and agate centre; 1 to 2 inch diameter; in
 morocco case, (*a very superior London article, such as*
are used by officers in the British army,) 4 50, 4 75, 5 25, 6 50
 655. Pocket Compass; in mahogany cases; with stop; $1\frac{1}{2}$ to 3
 inch diameter,1 00, 1 25, 1 50, 2 00
 656. Pocket Compass; Brass; with cover, stop, and sun dial,...4 50
 657. Pocket Compass for geologists; Brass; with stop, and
 pendulum, to give the angle or inclination,.....5 25 to 6 50
 658. Boat Compass; floating card; 3 inch diameter,.....1 50
 659. Boat Compass; floating card; 3 inch diameter; with agate
 centre, extra finish,.....3 75

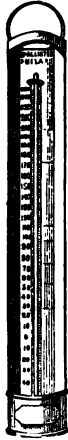
Sun Dials.



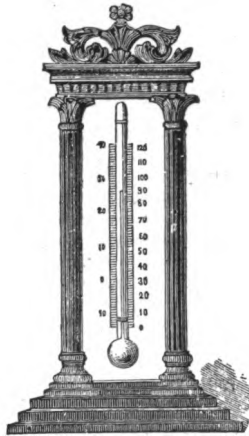
665

665. Sun Dials; cast iron; 10 inches diameter,1 25
 666. Sun Dials; of Brass, silvered; made to order for any
 latitude,6 00 to 12 00
 667. Sun Dials; of Brass, silvered; with graduated Arc and
 Compass, so as to be adjusted to any latitude, 8 00 to 15 00

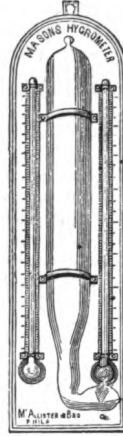
Thermometers and Hygrometers.



675



694



700

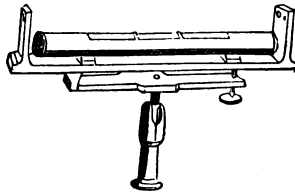
- 675. Thermometers; Tin cases,62, 75, 1 00, 1 25, 1 50
- 676. Thermometers; Tin cases; thick scale, for manufacturers,
1 50, 1 75, 2 00
- 677. Thermometers; Tin cases; Fahrenheit and Reaumur
scales.1 25, 1 50, 1 75
- 678. Thermometers; Copper case; for Baths, etc.,
1 25, 1 50, 1 75, 2 00
- 679. Thermometers; Copper case; thick scale; for manufac-
turers,1 75, 2 00, 2 25
- 680. Thermometers; Copper case; thick scale; cup bottom,
for brewers,2 00 to 2 50
- 681. Thermometers; Copper case; Ivory scale,1 75
- 682. Thermometers; Morocco case; for travelling,
1 00, 1 25, 1 50, 2 00, 2 50
- 683. Thermometers; common Wood scale,50
- 684. Thermometers; Boxwood scale; very neat; tube set in
the wood,1 00 to 2 00
- 685. Thermometers; Chemical; Boxwood scale, with hinge,
allowing the bulb to be immersed in acids, etc., gradu-
ated from 300 to 700 degrees,2 00 to 3 00
- 686. Thermometers; enclosed in glass tube, for liquids, 75, 1 25, 2 50
- 687. Thermometers; self-registering; wood scale; for cold,1 00
- 688. Thermometers; self-registering; Porcelain scale; for cold, 1 25
- 689. Thermometers; self-registering; Boxwood scale; for
cold,1 50, 1 75, 2 00

699. Thermometers; self-registering; Boxwood scale; for heat,2 00, 2 50, 3 00

**. These selfregistering Thermometers register of themselves the greatest heat or cold, in a day, night, month, or year.

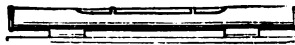
691. Thermometers; Carved oak frames; 12 to 24 inches long, a handsome article with large, distinct figures, and large column of mercury, well adapted for halls, piazzas, and public buildings,3 50 to 10 00
 692. Thermometers; Rosewood case; glass front,2 00, 3 00
 693. Thermometers; Mahogany case; glass front,2 00, 3 00
 694. Thermometers; Berlin iron stands; a great variety of patterns,1 50 to 5 00
 695. Thermometers; Ivory scale; 6 inches long, on round Walnut base, with glass shade; a neat and good article, 2 00
 696. Thermometers; spirit, for low temperatures,1 00 to 3 00
 697. Thermometers; with Reaumur and centigrade scales,1 50
 700. Mason's hygrometer, for showing the humidity of the atmosphere; it consists of two thermometers, placed side by side, the bulb of one being kept constantly wet by water from the glass fountain between the thermometers. The only reliable hygrometers, and very easily managed; with directions and tables,3 00
 701. Saussure's Hair Hygrometer,2 00 to 5 00
 702. Daniell's Hygrometer,14 00

Levels and Plumbs.



705

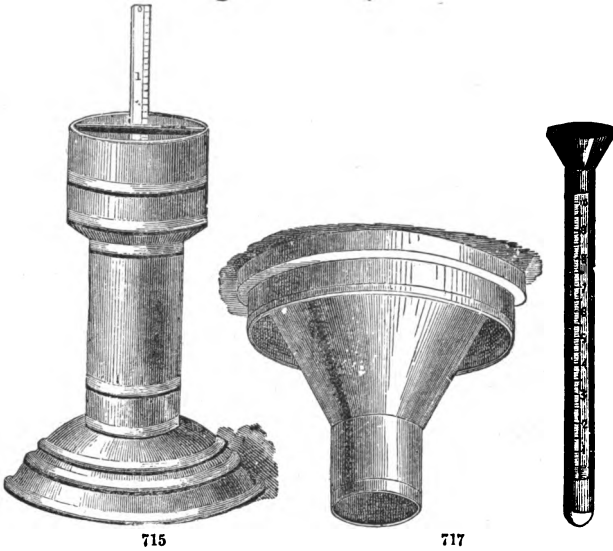
705. Level; Brass mounted; plate 12 inches long, with sights, and ball, and socket joint,17 00



706

706. Levels; mounted in brass, for mechanical purposes; 3 inch, 75; 6 inch,1 50
 707. Level Bulbs; unmounted, 2 to 6 inches long,12 to 50
 708. Plumb Bobs; accurate; Steel points,1 00
 709. Plumb Bobs; accurate; Steel points, and Screw cap,1 25

Rain Gauges.



715

717

715. Rain Gauge, with graduated float; Japanned, 5 00
 716. Rain Gauge, with graduated float; Copper, 8 00

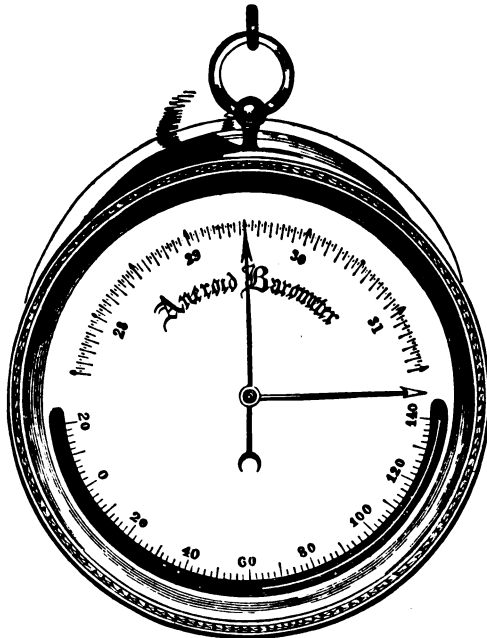
*. These register to the twentieth of an inch, and are the most convenient for families.

717. Rain Gauge, Japanned, 2 50
 718. Rain Gauge, Japanned; same as No. 717, with brass rim,
 to preserve the area of the funnel, 3 00
 719. Glass tube, extra, larger size for measuring $\frac{1}{2}$ inch, 1 50

These consist of a funnel to collect the rain, and a graduated glass tube or measure, by which the one-thousandth of an inch can be noted. The funnel is placed (in a situation free from currents of winds,) on the top of a bottle, and secured from being blown off: the rain thus collected is measured by pouring it into the graduated tube. The tube full contains one-tenth of an inch in depth of the funnel; the divisions between the figures 1, 2, 3, &c., are equal to one-hundredths of an inch in depth, and the small divisions between the figures, if divided into five, are one five-hundredths, or into tenths are one-thousandths of an inch in depth of the funnel. In case of a heavy rain it may be tedious to measure it in the tube which only holds one-tenth, some persons, therefore, procure another tube holding $\frac{1}{2}$ inch.

*. These Rain Gauges are used by the Smithsonian Institute, and are the most accurate, though not so well calculated for ordinary use as Nos. 715, 716, with which, at any moment of the storm, the amount of rain that has fallen can be readily seen.

Aneroid Barometer.



726

725. Aneroid Barometer,15 00
 726. Aneroid Barometer, with Thermometer attached,18 00

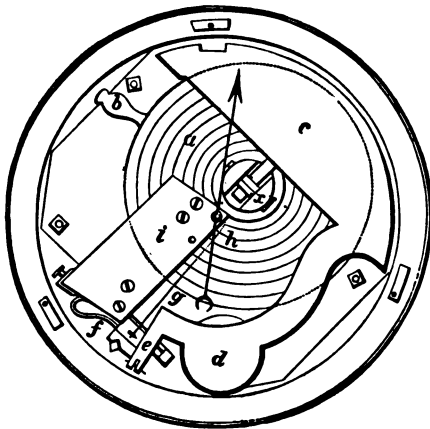
The Aneroid Barometer is a simple, beautiful, and accurate indicator of atmospheric changes, constructed on an entirely novel principle. The word "*Aneroid*" is derived from the Greek, *alpha, neros, eidos*, signifying a *form without fluid*. It seems a matter of surprise, that so many distinguished men should have devoted so much time and care to improve the barometer constructed with fluids, without even an attempt to supply its place by employing a vacuum vase; as the latter renders the instrument incalculably more useful from its portability.

The Aneroid Barometer is quite as accurate as the Mercurial Barometer, much more portable, and can be transported safely with reasonable care, thus adapting itself to the need of the scientific traveller. It will also prove invaluable for nautical purposes, its action not being affected either by the motion of a vessel, temperature, or variations of climate. The ornamental appearance it presents renders it highly suitable for the hall, library, or parlour.

Professor Lloyd, at a meeting of the British Association, reported that the indications of the Aneroid had been tested by placing it under the receiver of an air pump; and observing its action in comparison with the indications of the long gauge, they were found to agree to less than the one-hundredth of an inch. The action of the Aneroid depends on the effect produced by the pressure of the atmosphere on a circular metallic chamber, exhausted of air and hermetically sealed; thus the chamber is a substitute for the Toricellian tube, and the vacuum for the column of mercury.

The engraving on preceding page represents the external appearance of the instrument. It is four inches and three-quarters in diameter across the face, and one inch and three-quarters in thickness. The pressure of the atmosphere is indicated by a steel hand pointing to a scale, which is graduated to correspond with the usual barometer. There is also a brass index hand attached to the glass covering the instrument, by which to register the changes.

Its internal construction will be understood by reference to the following engraving, which represents it when the face is removed, but with the hand still attached.



a is a flat, circular, metallic box, about two inches and three-quarters in diameter, and a quarter of an inch in depth, having its upper and under surfaces corrugated in concentric circles. This box or chamber being exhausted of air through the short tube *b*, which is subsequently made air tight by soldering, constitutes a spring, which is affected by every variation of pressure in the external atmosphere, the corrugations on its surface increasing its elasticity. At the centre of the upper surface of the exhausted chamber, there is a solid cylindrical projection, *z*, about half an inch high, to the top of which the principal lever *c*, *d*, *e*, is attached, as shown in the drawing. This lever rests partly on a spiral spring at

d; it is also supported by two vertical pins, with perfect freedom of motion. The end *e* of the large or principal lever is attached to a second or small lever, *f*, from which a chain, *g*, extends to *h*, changing the motion from vertical to horizontal, and regulating the hand, the attachments of which are made to the metallic plate *i*. The motion originates in the corrugated elastic box *a*, the surface of which is depressed or elevated, as the weight of the atmosphere is increased or diminished, and this motion is communicated through the levers to the axis of the hand, at *h*. The spiral spring on which the lever rests at *d*, is intended to compensate for the effects of alterations of temperature. The actual movement at the centre of the exhausted box is very slight, but by the action of the levers this is multiplied 657 times at the point of the hand, so that a movement of the two hundred and twentieth part of an inch in the box carries the point of the hand through three inches on the dial.

The Aneroid is also applicable for determining altitudes, by the variation of the atmospheric pressure at different heights; and thus forms an excellent substitute for the mountain barometer. As a general rule, every 92 feet of ascent will be indicated by a fall of one-tenth of an inch; thus in ascending to the roof of an ordinary four story house, the barometer will fall about one-twentieth of an inch.

Though a portable instrument, it requires some care; a severe jar, by causing a great vibration of the hand, may cause it to move on the pinion; and a fall would, in all probability, seriously injure it, as well as break the glass. Should the hand get out of place, it can easily be brought to the right position, and made to agree with a standard barometer, by turning the screw *which is in an opening at the back of the instrument.*

Mercurial Barometers.

730. Upright Barometer; Mahogany case,	10 00
731. Upright Barometer; with vernier, ivory scale, and thermometer,	12 00 to 15 00
732. Wheel Barometer; circular dial plate, in various styles of mounting,	15.00 to 30 00
733. Barometer; brass frame, as used by the Smithsonian Institute,	35 00
734. Mountain Barometer, on Tripod,	50 00

738. Bourdon's Metallic Barometer, without mercury, somewhat on the plan of Bourdon's Steam Gauge, 18 00 to 30 00	
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*. We do not see that this has any advantage over the Aneroid, and it is more costly.

REMARKS ON THE BAROMETER.

As considerable misconception prevails relative to the action of the barometer, as a prognostic of atmospheric changes, the following remarks may prove of service to the observer.

Too much importance is generally attached to the words change, fair, rain, etc., invariably engraved on the scales of barometers; for, from the observations of two centuries we find, that heavy rains, and of long continuance, sometimes take place with the hand standing at 29.5 inches, or change; that rain frequently falls when it stands as high as 30 inches, or fair; and, more particularly in winter, a fine bright day will succeed a stormy night, the hand standing as low as 29 inches, or opposite rain.

To prognosticate alterations in the weather, the *changes* of the barometer—its *actual rising and falling*—should alone be attended to, and compared with what it was a few hours previous to the observation; in other words, it is the *relative*, and not the *absolute* height of the barometer which determines the kind of weather likely to follow.

The *range* of the barometer is much less than is frequently supposed; in our climate the range is from 29 to 31 inches, very seldom going beyond these points. A rise or a fall of a few tenths of an inch, therefore, may indicate a considerable variation of atmospheric pressure.

The rules for the barometer, as generally found in books, are the result of European observations, and not always adapted to this country. The following are the result of many years' observations carefully made in the State of Pennsylvania, and duly registered.

1. The *gradual* rising of the barometer generally indicates fine weather, particularly if accompanied by a north, north-west, or west wind. Should the wind change towards the east, a storm of some continuance may be predicted.
2. The *rapid* rising of the barometer generally indicates the approach of a storm, particularly if followed by an east, north-east, or south-east wind.
3. The barometer begins to fall at the time, or soon after or before, a storm commences, and continues falling during its progress to a certain point—then becomes stationary—and again rises as the storm is about ending, particularly if the wind becomes north, north-west, or west. Clear weather follows.
4. Rapid fluctuations of the barometer, rising and falling alternately, indicate changeable weather.
5. Some of these changes of the barometer may occur in consequence of storms near, but not in the *immediate* locality.
6. The barometer *alone* is not an accurate index to the weather, but associated with the thermometer, hygrometer, and observations on the winds and clouds, it may be confidently depended upon.

For further information about barometers, see "Belleville on the Barometer," and "Boyd's Pneumatics," on last page of the Catalogue.

Hydrometers, etc.



750.	Glass Hydrometer, for Liquor,.....	50
751.	“ “ for Syrup,	50
752.	“ “ for Alkali,.....	50
753.	“ “ for Acid,	50
754.	“ “ for Acid, with Thermometer attached, 2 00	
755.	“ “ for Concentrated Acids,.....	50
756.	“ “ for Salt,	50
757.	“ “ for Oil,.....	50
758.	“ “ for Beer, ..	50
759.	“ “ Tralle & Richter,	1 00
760.	“ “ Twaddles, for Dyers and Calico Printers,.....Nos. 1, 2, 3, 4, each \$1 00, Nos. 5, 6, each 1 50	
761.	Brass Hydrometers, for Liquors,.....	2 50
762.	“ “ for Syrups,	2 50
763.	German Silver Hydrometers, for Liquors,.....	2 50
764.	“ “ “ for Syrups,	2 50
765.	Tall Glass Jar, with foot and lip, for Hydrometers,.....	63
766.	Salometer, for Sea Steamers,.....	1 50
767.	Urinometer, for Physicians, in paper boxes,.....	50
768.	“ “ in morocco case, with gradu- ated glass measure,	2 25
769.	“ “ in morocco case, with gradu- ated glass measure and Thermometer,.....	3 50

Specific Gravity Apparatus.

770.	A Steel Beam Balance, on brass pillar with lever, mounted on polished wood stand with drawer; set of Troy weights, from half grain to two ounces; glass jar, brass cup and scale pan,	6 50
771.	Steel Beam Balance, mounted as above, larger size; set of Troy weights, from half grain to four ounce; glass jar, brass cup and scale, and glass drop for liquids,.....	13 00
772.	A Balance, mounted as above, larger, and more accurate; set of Troy weights, from half grain to eight ounces; brass cup and scale; glass drop for fluids, brass tube	

PLATINA POINTS FOR LIGHTNING RODS. 61

apparatus for showing that all bodies lose the weight of an equal bulk of fluid in which they are immersed; two glass hydrometers and jar,	20 00
773. Nicholson's Areometer, Brass, for ascertaining the specific gravity of solids; with jar,	4 00
774. Specific Gravity Bottle; holding 1000 grains of distilled water,	1 00
775. Specific Gravity Bottle, with glass stopper, holding 1000 grains of distilled water; in tin case, with counterpoise weight,	3 50

Platina Points for Lightning Rods,
OF PURE PLATINA.

776. Platina Points for Lightning Rods—the price varying according to the quantity of platina with which the points are tipped, each,.....	1 00, 1 25, 1 50, 2 00, 3 00, 4 00
777. Glass Insulators, for Lightning Rods, per dozen,	37
778. Iron Staples, for “ “	37

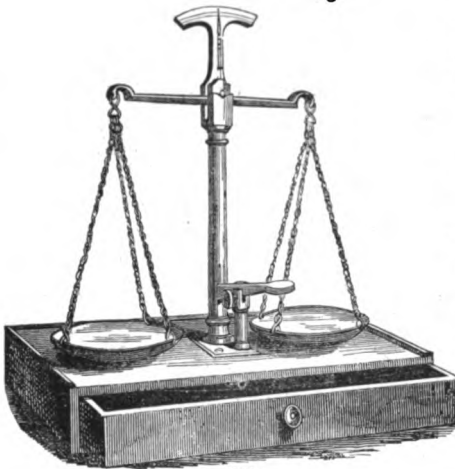
In regard to the construction of Lightning Rods, it is doubtful if there is any improvement on the old plan of Dr. Franklin, with the exception of capping the rod with a point of pure platina. Platina possesses great advantages for such an adaptation, as it is the most difficult metal to melt, and does not rust or corrode, thus always presenting a clean surface.

Our points are made of a tapering copper body, about 6 inches long, well gilt with pure gold, to prevent the action of the weather, and tipped with solid platina; they have been in use for over twenty years, and have given general satisfaction.

It is all important that the connexion of the point with the ground should be perfect. The iron used in the Lightning Rod may be half inch or five-eighth inch diameter, for the upper part of the rod; but it is recommended that the lower part, from about two feet above the ground, should be somewhat stouter. The several lengths of which it is composed should be welded together, if possible, so as to make a continuous rod; where this cannot be done, it is recommended to have them screwed together. The old plan of connexion with links, is objectionable, as the links become rusty, and thus prevent actual contact. The upper end of the rod should extend at least five or six feet above the roof or stack of chimneys to which it is attached; *the lower end should extend into the ground five or six feet below the surface, that it may be always in damp earth, and should be led off in a direction from the building, and, if possible, should be conducted to a well or water.*

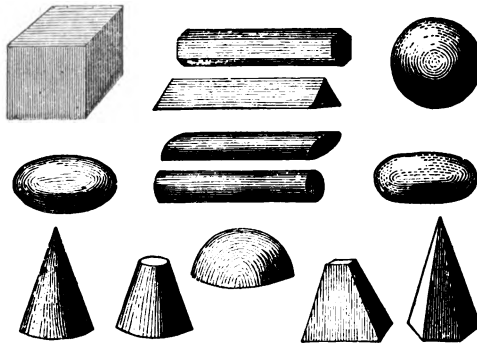
It is entirely a matter of conjecture as to what distance around will be protected by a Lightning Rod, and the safest plan, therefore, is to attach a rod to every exposed part of a large house or barn.

Scales and Weights—Sand Glasses.



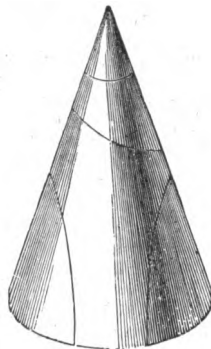
779.	Scales, to hold in the hand; morocco box; dishes 2½ inches diameter,.....	75
780.	Scales, to hold in the hand; wood box; dishes 3¼ in. diam. 1 25	
781.	“ with brass pillar; polished wood box, with drawer; dishes 3 inches diameter,.....	1 75
782.	“ with brass pillar and lifter; polished wood box, with drawer; dishes 3 inches diameter,.....	2 50
783.	“ with brass pillar and lifter; polished wood box, with drawer; dishes 4 inches diameter,.....	4 00
784.	Troy Weights, cup pattern, 16 ounces to ½ ounce,.....	2 00
785.	“ “ 8 “ to ½ “	1 25
786.	“ “ 4 “ to ½ “	1 00
787.	“ “ 2 “ to ½ “	75
788.	“ “ 1 “ to ½ “	50
789.	“ “ 1 “ to ½ “ with penny weights and grains,....	62
790.	Sand Glasses, one hour, ebony frame, for teachers,.....	2 00
791.	“ “ common wood frame, “	62
792.	“ half hour, ebony frame, “	1 50
793.	“ common frame, “	50
794.	“ quarter hour, rose-wood frame, “	1 00
795.	“ 3 minutes, “ (egg glass,)	50
796.	“ 3 “ white-wood frame, “	37
797.	“ 2 “ rose-wood frame, for daguerreotypists,	50
798.	“ 1 “ rose-wood frame, for daguerreotypists,	50

Geometrical Models, etc.



800

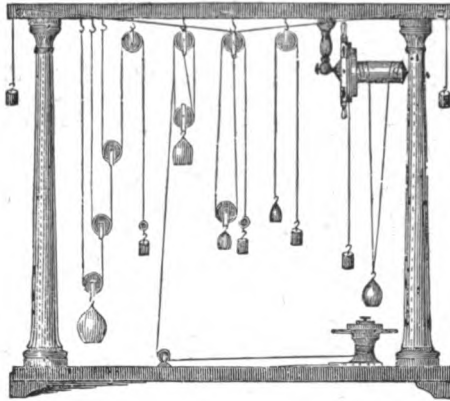
800. Set of 13 Wood Models of Solid Geometry, viz.: Cube, Sphere, Hemisphere, Prisms, Pyramids, Spheroids, Cone, Frustum of Cone, Frustum of pyramid.....1 25



801

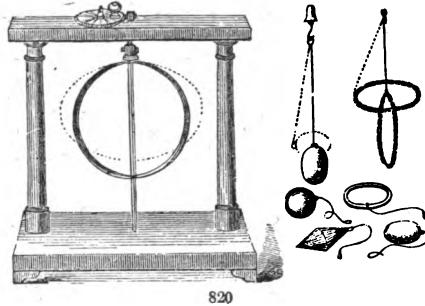
801. Dissected Cone, with pins, showing the Circle, Ellipse, Parabolic and Hyperbolic Sections,.....2 00
 802. Dissected Cube, for illustrating Cube Root,1 00
 803. Set of 64 one-inch Cubes, in Box, for Numeration, Cube Root, &c.,2 00
 804. Mathematical Paradox, or curious block, which *fits* exactly, and *passes through* a square, a circle, and triangle,...75

Mechanics, etc.



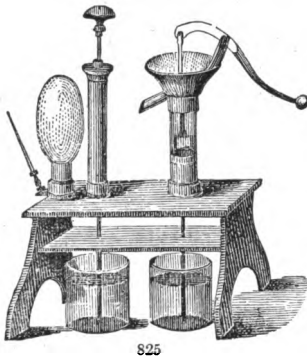
810. Mechanical Powers, with four sets of Brass Pulleys, Counterpoises, Brass and Japanned Weights; Wheel and Axle; Capstan; Simple and Compound Levers of Brass, with weights; Inclined Plane, with carriage and weight; Wedge in two parts; Screw in frame; mounted on mahogany stands; the above engraving represents the Pulleys, Wheel and Axle, and Capstan,30 00
811. Inertia Apparatus; Card, Ball and Spring,1 50
812. Set of 5 Boxwood Balls, suspended from a frame, with graduated arc, for laws of Collision and Percussion,3 50
813. Set of 5 Ivory Balls, arranged as No. 812,7 00
814. Set of 8 Illustrations for Centre of Gravity, viz.: three Blocks, of various figures, with centres of gravity and suspension; two Balls, on rod, with centre of gravity; Leaning Tower of Pisa, with two centres of gravity; Loaded Wheel, on stand, with centre of gravity and magnitude; Mechanical Paradox—a double cone *appears to roll up hill*; Horseman, balanced on *two points*. This set also includes a Brass Plumb, Cord, and Handle, for supporting the various articles on centre of gravity,8 00
815. Mechanical Paradox—a double cone, which appears to roll up hill,75
816. Philosophical Waltzers; one or two beautiful little images are attached to a Glass Lens, which when placed upon a clean wet plate, and the plate inclined, produce a rotary, progressive, motion, illustrating centre of gravity,50 and 1 00
817. Chinese Step Figure, which, by a change in the centre of gravity, turns somersets down a series of steps,1 50

Centrifugal Forces, etc.



820

820. Apparatus for Central and Centrifugal Forces, with 8 illustrations—Sphere, Oblate Spheroid, Prolate Spheroid, Double Cone, Ring, Band, Chain, and Glass with coloured fluid; exhibits, in a beautiful manner, the cause of the planets revolving on their shortest diameter; the cause of their being flattened at the poles; the peculiar effect of rapid rotation upon the loose parts of a body; and a variety of other pleasing effects, 8 00
821. Apparatus for Central and Centrifugal Forces, with six illustrations—Sphere, Oblate Spheroid, Prolate Spheroid, Double Cone, Ring, and Band,.....5 00
822. Prismatic Cylinder, to attach to above, to recompose white light,1 50



825

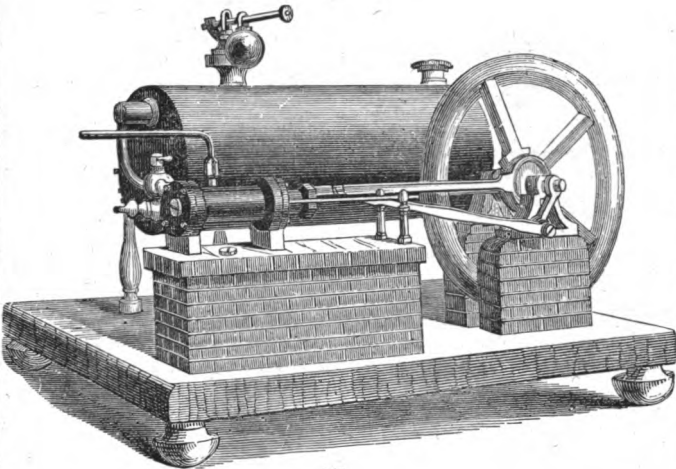
825. Model of Forcing Pump, and Household or Lifting Pump, with glass barrels, both arranged on one stand, 13 00
826. Model of Archimedes' Screw Pump, of metal,7 00
827. Model of Hero's Fountain, which jets above its source,.....6 00
828. Model of Centrifugal Pump,10 00
829. Model of Water Wheels, Over-shot, Breast and Under-shot,.....6 00 to 25 00
830. Model of Barker's Water Wheel,5 00
831. Hydrostatic Bellows and Paradox,10 00

6*

832. Hydrostatic Figure, or Bottle Imp, with tall jar and sheet rubber,.....1 00 to 1 50
 833. Hydrostatic Figure, Balloon and Car, with tall jar and sheet rubber,.....4 50 to 6 00

*** These figures move up and down in the jar, by pressing upon the sheet rubber stretched across the top of the jar, the jar being nearly filled with alcohol. A very pleasing illustration of several philosophical principles.

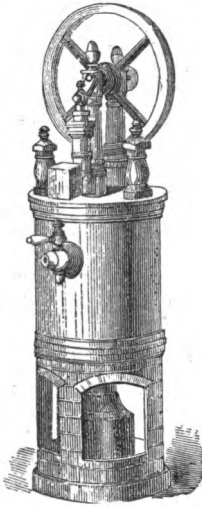
Steam.



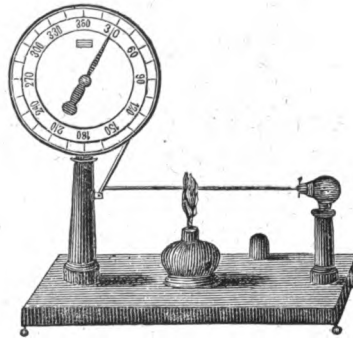
840

840. Operating Model of High Pressure Steam Engine; double acting cylinder; sliding valve; copper boiler, with Spirit Lamp; the engine beautifully finished, of brass, on a mahogany stand, about 12 inches square,.....35 00
 841. Operating Model of a Locomotive, all of brass, with Spirit Lamp; runs in a circle of five feet diameter,35 00
 842. Sectional Model of a Low Pressure Steam Engine, made of pasteboard and wood. By means of a crank at the rear, every part is put in motion, the piston, valves, beam, wheel, and eccentric; it is about 11 inches square, and affords the best explanation for schools, and is very beautifully made,.....8 00
 843. Sectional Model of a Locomotive,.....10 00
 844. Sectional Model of a Steam Boat,.....10 00
 845. Revolving Steam Jet, of brass, complete in itself; illustrates Hero's Steam Engine,1 75

846. Candle Bombs; small glass balls, partially filled with water, which on being put in the wick of a lamp, explode with great violence. Per dozen,.....25
 847. Operating Model of High Pressure Steam Engine, with Spirit Lamp,.....8 50
 848. Same as last, larger size, square base,.....17 00



847

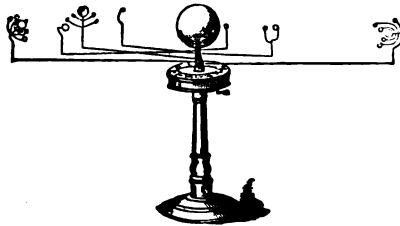


855

Heat.

855. Pyrometer, with Spirit Lamp, for showing the expansion of metals by heat,.....4 00
 856. Compound Bar of Brass, Iron and Zinc, for showing the unequal expansion of metals by the same heat,.....75
 857. Brass Ball and Gauge Ring, for showing the expansion of metals in all directions, with Spirit Lamp,.....2 75
 858. Improved Conductometer, with Spirit Lamp, for showing the capacity of different materials to transmit heat—consists of 6 materials, each having wax or phosphorus on its extremity,.....8 00
 859. Wollaston's Cryopherus, for freezing water,2 50

Astronomy and Globes.



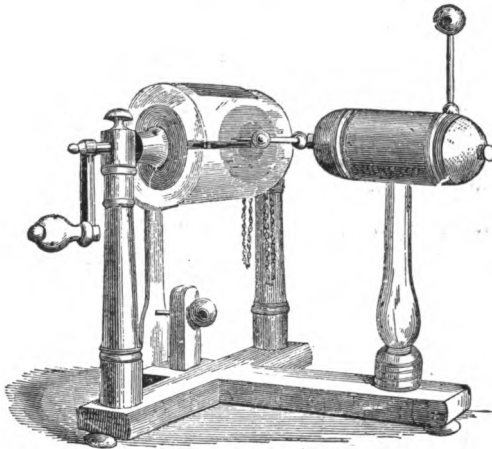
865

865. Orrery, on Mahogany Stand, with Zodiac, Gilt Sun, Crank, and Wheelwork; and all the Planets, from Mercury to Neptune,..... 10 00
866. Superior Orrery, on Brass Tripod Stand,.....20 00
867. Tellurian or Season Machine, for showing all the Phenomena of the Seasons and Eclipses, on Mahogany Stand, with Gilt Sun,.....8 00
868. Tide Dial, 15 inches diameter, which, by turning a crank, illustrates the daily change in the Tides, the Diurnal motion of the Earth, cause of Eclipses, and shows the Earth's Umbra and Penumbra; with Gilt Sun, on stand, 6 00



875. 6 Inch Globe, bronze frame, per pair,.....9 00
876. 6 " " " Terrestrial,.....4 50
877. 10 " " wood frame, walnut case, lock, per pair,....24 00
878. 10 " " " Terrestrial,.....12 00
879. 10 " " " neat plain case, per pair,....22 00
880. 10 " " " Terrestrial,11 00
881. 10 " " bronze frame, walnut case, lock, per pair,....26 00
882. 10 " " " Terrestrial,.....13 00
883. 10 " " " neat plain case, per pair,....24 00
884. 10 " " " Terrestrial,.....12 00
885. 10 " " parlour pattern, high mahogany stand, p. pr. 32 00
886. 10 " " " Terrestrial,1 00
887. 12 " " wood frame, neat plain case, per pair,....26 00
888. 12 " " " Terrestrial,13 00
889. 12 " " on high metal stand, with castors, per pair, 45 00

Electricity.



900. Cylindrical Electrical Machine; 5 inch cylinder, with Prime Conductor; handsomely mounted on mahogany stand, 10 00
901. Cylinder Electrical Machine; 6 inch cylinder,.... 12 00 to 14 00
902. " " 8 " 20 00 to 25 00
903. " " 10 " 30 00 to 35 00
904. Plate Electrical Machine; 16 inch plate: perfectly insulated, with Brass Conductor; superior finish,.... 25 00 to 30 00
905. Plate Electrical Machine; 18 inch plate, 30 00 to 40 00
906. " " 24 " 50 00 to 60 00
907. " " 30 " 100 00
908. " " 36 " 140 00
909. " " cheap finish, plate 8 to 12 inches diameter,.... 5 00 to 15 00
910. Leyden Jars,..... pint 1 00, quart 1 25, 2 quarts 1 75
911. Lightning Jars,..... pint 1 25, quart 1 50
912. Diamond or Spotted Jar, 1 00 to 5 00
913. Glass Jar, with moveable coatings, to explain the Leyden Jar, 3 00
914. Battery of 9 one gallon jars,..... 25 00
915. " 9 quart " 15 00
916. Universal Discharger, with adjusting Table and Press, 6 00
917. Jointed Discharger; glass handle, 4 50
918. Plain " " 1 50 and 2 00
919. Metallic Plates, on adjusting stand, for Dancing Images, 1 50
920. " " on insulated " " 6 00
921. Pith Images, for the Dancing Plates, each, 75
922. Pith Balls, per dozen, 50

M^cALLISTER & BROTHER,

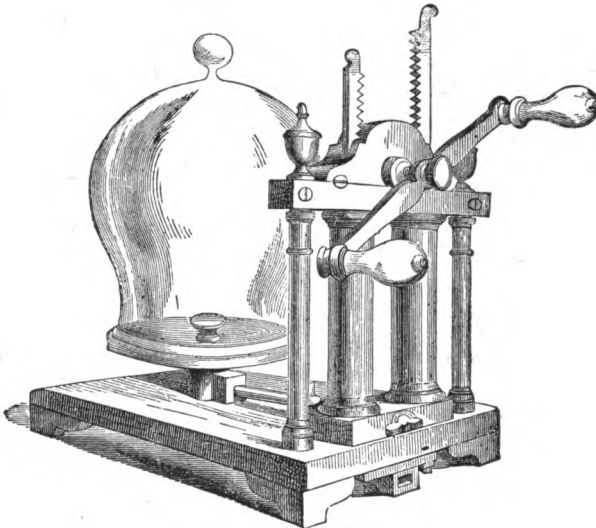
70

ELECTRICITY.

923.	Rennet's Gold Leaf Electroscope,	2 50 to 3 50
924.	" " " with Condenser,	6 00
925.	Coulomb's Tortion Electrometer,	10 00 to 15 00
926.	Quadrant Electrometer, box-wood scale,	1 50
927.	" " ivory scale,	2 50
928.	Lane's Discharging Electrometer,	2 50
929.	Pith Ball Electrometer,	50 cts. and 75
930.	Cuthbertson's Balance Electrometer, by which the force of the shock or charge is weighed,	6 00
931.	Saussure's Electroscope,	2 00
932.	Chime of 5 Bells, on insulated stand,	6 00 and 8 00
933.	" of 3 " to suspend from the Conductor,	3 00
934.	" of 2 " one of them being connected with the interior of a Leyden Jar,	4 00
935.	" of 3 " connected in the same way with the Leyden Jar—cheap finish,	2 75
936.	Aurora Tube, 3 feet long, with Stop Cock, &c., complete, for showing Electrical Light in rarified Air,	6 00
937.	Luminous Flask, with brass Cap and Point,	1 50
938.	Spiral or Diamond Tubes,	2 00 to 4 00
939.	Insulated Stools,	4 00 to 6 00
940.	Electrical Flier or Whirl, with Rod,	50
941.	Set of 3 Fliers on Trident,	2 00
942.	Electrical Sportsman and Birds,	5 00
943.	" Fox Chase,	3 00
944.	" See-Saw, with figures,	3 00
945.	" Swing,	2 50
946.	" Bucket,	75
947.	" Cannon, Brass, on Brass Wheels, ..	4 50
948.	" Pis'ol,	2 50
949.	" Spider,	38
950.	" Orrery, which represents the motion of the Sun, Earth and Moon,	2 50 to 3 50
951.	" Powder Bombs, in which Gunpowder will be exploded with certainty,	1 00
952.	" Mortar and Ball, for firing with oil,	2 00
953.	Head of Hair,	1 00
954.	Magic Picture; figures of a Vase, Bottle, &c., arranged upon glass plates with pieces of tin foil, which are ren- dered luminous by passing the electric spark through them—each plate,	75
955.	Mahogany Model of the Gable-end of a House, for illus- trating the effects of perfect and broken Conductors,	1 50
956.	Mahogany Model of a Thunder House, hinged, to be blown down by a Gas Pistol within—also illustrating the preceding,	6 00
957.	Mahogany Model of an Obelisk, which is thrown down by the simple discharge of a highly charged jar,	3 00
958.	Japanned Tin Fire or Lightning House—this is a house of tin with a ball of cotton in it, which is set on fire by an electric spark—illustrating lightning,	4 50
959.	Brass Ball, on stand, for igniting Cotton and Rosin,	1 00
960.	Apparatus for Ignition of Phosphorus,	4 00

961. Ether Cup, with handle,	63
962. Luminous Word, as Franklin, Fire, &c.,	2 50 to 4 00
963. Egg Stand—for passing a spark through eggs,	2 00
964. Electrophorus,	3 50 to 6 00
965. Miser's Plate, in mahogany frame and handle, for giving shocks in an amusing manner,	1 50 and 2 50
966. Hydrogen Gas Generators, for charging Cannons and Pistols,	4 00
967. Rod of Sealing Wax,	1 00 and 1 50
968. Singer's Best Amalgam, in Boxes,	25
969. Brass Balls on Stems, for Leyden Jars,	25 cts. to 50
970. Tin Foil, for coating jars, per square foot,	10
971. Brass Chain, per foot,	4

Pneumatics.



972. Double Barrel Air Pump, with Mercurial Gauge; raised stage, barrels 9 inches long, 2 inches diameter; to ex- haust or condense; 2 receivers and clamp,	75 00
973. Double Barrel Air Pump; barrels 7 inches long, 1½ inch diameter; plate 7 inches diameter; 2 receivers and clamp,	35 00
974. Single Barrel Air Pump; plate 6 inches diameter, with one receiver,	8 00

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PNEUMATICS.

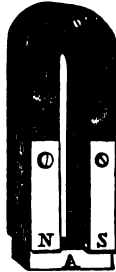
975. Single Barrel Air Pump; plate $6\frac{3}{4}$ inches diameter, with one receiver,	12 00
976. Single Barrel Air Pump; plate $7\frac{1}{2}$ inches diameter, with one receiver,	15 00
977. Single Barrel Air Pump; on cast iron stand, the barrel set at an angle, for greater convenience in using; plate $7\frac{1}{2}$ inches diameter, with one receiver,	15 00
978. Plain Glass Receivers, 1 gal. 1 00, $\frac{1}{2}$ gal. 75 cts., qt. 50	
979. " " open top, 1 gal. 1 25, $\frac{1}{2}$ gal. 1 00, qt. 62	
980. Swelled " 2 gal. 3 00, 1 gal. 1 75	
981. " " open top, 2 gal. 3 00, 1 gal. 1 75	
982. Stoppered " (ground glass stoppers,) 1 gal. 1 25 $\frac{1}{2}$ gal. 1 00, qt. 62	
983. Hand Glass,	75
984. Bladder Glass,	1 00
985. Double Hand Glass, or Philosophical Hand Cuffs,	3 50
986. Apple Cutter,	1 50
987. Brass Hemispheres,	3 50 to 6 00
988. Fountain for Vacuum, cock, jet and stand,	4 00 to 5 00
989. Brass Plate with sliding Rod, hook and clamp,	3 00 to 4 00
990. Bolt Head Experiment,	1 25
991. Guinea and Feather Apparatus,	4 00 to 6 00
992. Bladder and Weight,	3 00 to 4 00
993. Bell in Vacuo,	2 50 to 4 00
994. Air Mills,	6 00
995. Mercury Cup,	1 50
996. Receiver for Mercury Cup,	2 00 to 3 00
997. 6 Bursting Squares, with Wire Guard,	2 50
998. Wire Guards for the above, each,	75 cts. and 1 00
999. Block of Wood, weighted to sink in water, to show the air contained in the pores of the wood,	25
1000. Copper Vessel, for Condensed Fountain, 8 00, 15 00, and 20 00	
1001. Condensing Syringe, for " 2 50 to 5 00	
1002. Revolving Jet, for " 75	
1003. Air Gun Jet. for " 1 00	
1004. Funnel and Ball, for " 1 25	
1005. Pneumatic Paradox, of Glass. The ball placed upon one e.d. (the cup,) cannot be blown off; and, on the other, can be supported upon a jet of air. It is used with the mouth,	38
1006. Water Hammer, showing that the collision of water in a vacuum produces a sharp noise, like solid bodies,	1 00
1007. Revolving Fans and Handle, to show resistance of air,	75
1008. Illustration of the Diving Bell, of Glass,	1 50
1009. Palm Glass, the liquid in which appears to boil by the heat of the hand,	50

*. Nos. 1000, 1001, 1002, 1003, 1004, form a set, are complete in themselves, and do not need an Air Pump.

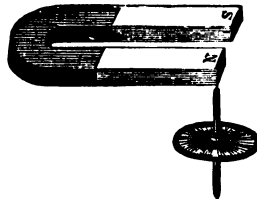
Magnetism and Galvanism.



1050

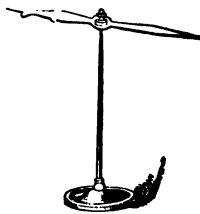


1051



1054

1050. Horse Shoe Magnets,.....12, 18, 37, 50, 62 cts. and 1 00
 1051. Compound Horse Shoe Magnets,.....2 00 to 5 00
 1052. Horse Shoe Magnet, with rolling wire armatures, to exhibit the mutual repulsion of two pieces of iron, magnetized by induction,1 00 to 2 00
 1053. Horse Shoe Magnet, with armature, consisting of iron wire hermetically sealed in a glass tube; to prove that the inductive action of a magnet is not impeded by the interposition of an unmagnetizable body,.....75
 1054. Horse Shoe Magnet, with brass wheel armature; in this the attraction of gravity so nearly overcomes the magnetic attraction as to leave but little friction, so that the wheel may be made to revolve rapidly for a long time,2 00
 1055. Y Armature,50
 1056. Star Plate,50
 1057. Bar Magnets, small,37, 50, 62, and 75
 1058. " " large, 2 in a box, with armature, ...3 00 to 5 00



1059

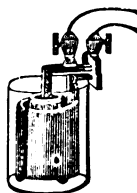
1059. Magnetic Needle, on stand, plain, for schools,1 00
 1060. Magnetic Dipping Needle,1 00 and 1 50
 1061. " " " on universal joint, so as to exhibit the dip, as well as the north and south, 4 00 to 6 00
 1062. Astatic Needle, on stand,2 00

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MAGNETISM, ETC.

1063. Magnetic Toys, Swan, Fish, &c., in box with magnet, 25 cts. and 50
 1064. Sulphate of Copper Battery,.....2 00, 5 00 and 7 00



1065

1065. Smee's Battery, per cup,1 50, 2 00, 3 50 and 5 00
 1066. " " of 2 cups in a box, for Plating or Gild-
 ing, with printed instructions,.....4 00

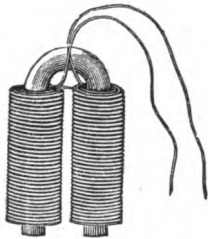
**. This can also be made into a Groves' Battery, by using porous cups with bottoms, into which the platina is set in pure nitric acid.

1067. Chester's Patent Battery of 5 cups,10 00
 1068. Groves' Battery, per cup,1 25, 1 75, 2 25
 1069. " " in sets of 4 in a box,8 00
 1070. " " " 8 "16 00
 1071. Zinc Cylinders, each,50 cts. to 1 00
 1072. Platina Slips, each,37 cts. to 1 00
 1073. Porous Cups, each,10 cts. to 25
 1074. Glass Cup, each,31 cts. to 50
 1075. Binding Screws, each,12 cts. to 25
 1076. Frog or Leech Battery. This consists of a strip of silver
 and a strip of Zinc, so arranged as to act on the leg
 of a frog in producing motion,50 cts. to 75
 1077. Powder Cup of Brass, for Firing Powder,50
 1078. Voltaic Pistol, for Exploding Gases,2 50
 1079. Brass Cannon, for " "5 00
 1080. Cells for Decomposing Water—2 tubes, for collecting
 both hydrogen and oxygen,3 50
 1081. Galvanic Lamp—without the Battery,2 50
 1082. Attracting and Repelling Wires, to exhibit the attrac-
 tions and repulsions of Electric currents,3 50
 1083. Contracting Helix; exhibits the mutual attraction be-
 tween different portions of the same current moving
 in the same manner,3 50
 1084. Clock-work Electrotome; for the purpose of interrupt-
 ing the circuit rapidly,6 00 and 7 00
 1085. Instrument for showing the Revolution of Mercury
 within a Helix,.....5 00
 1086. Insulated Forceps for Charcoal, per pair,1 50
 1087. Charcoal, per box,25

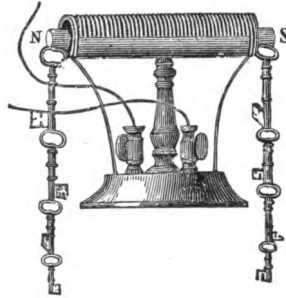
**. From 18 to 24 of Groves' Cups are required to burn charcoal, and about 100 to produce the Electric Light.

1088. Galvanometer, plain, (indicates presence of current of electricity,).....3 50
 1089. Horizontal Galvanometer, on tripod stand, with levelling screws,6 00
 1090. Upright Galvanometer, on tripod stand, with levelling screws,.....5 00
 1091. Galvanometer, with Astatic Needle,5 00 and 8 00
 1092. De la Rives' Ring, in small Glass Cup,1 00

Electro-Magnetism.

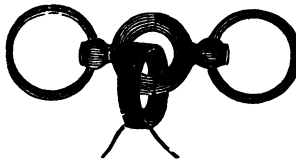


1093



1094

1093. Electro Magnet; a bar of iron wound with insulated wire,75 cts. to 1 50
 1094. Helix, on stand with iron bar, to show that the magnetizing power of the wire is greatly increased by making a coil of it,2 50
 1095. Globe and Coil, with Magnetic and Dipping Needle; illustrates the theory which ascribes the magnetism of the earth to electrical currents, circulating around it at right angles to its axis,4 00
 1096. Separable Helices,.....10 00 to 12 00



1097

1097. Heliacle Ring and Semicircles; two iron semicircles, made magnetic by the coil around them, are able to sustain a weight of 50 pounds or more,.....2 50 to 4 00

Thermo-Electricity.

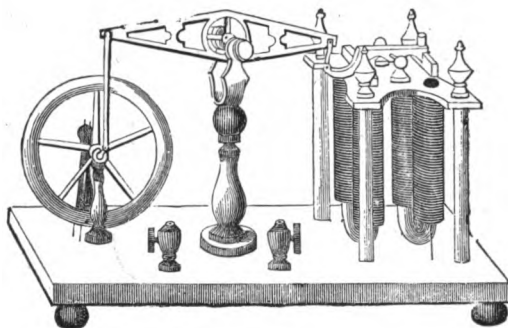
(Electricity developed by the agency of Heat, discovered by Professor Seebeck, of Berlin, in 1822.)

- | | | |
|-------|---|------|
| 1098. | Thermo Electric Pair, German Silver and Brass, | 25 |
| 1099. | “ “ Series of 10, | 2 00 |
| 1100. | “ “ Arch between the Poles of a U Magnet,
for showing the production of Heat and Cold by Mag-
netism, | 4 00 |
| 1101. | Thermo Electric Arch Rotating between the Poles of
a U Magnet—with Spirit Lamp, | 4 00 |

Galvanic and Electro-Magnetic Engines,

OR

MACHINES.

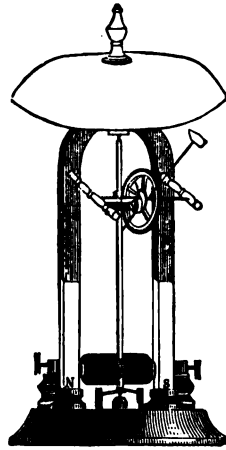


1102

- | | | |
|-------|--|-------|
| 1102. | Reciprocating Armature Engine—a very pleasing illus-
tration of Motion by Magnetism—it does not require
a very strong Battery, | 10 00 |
|-------|--|-------|



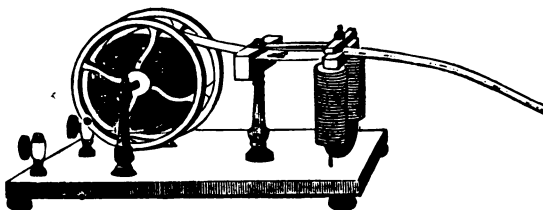
1103



1104

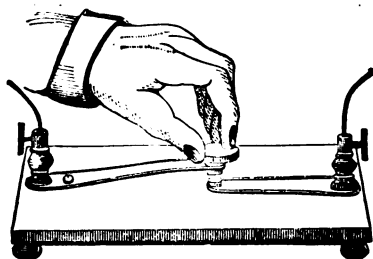
1103. Revolving Armature Engine—this, though not so interesting as the preceding, is a rather different mode of applying the power, and can be easily adjusted,6 00
1104. Revolving Bell Engine—this is yet another mode of obtaining motion, and gives more continuous power than either Nos. 1102 or 1103,.....10 00
1105. Registering Revolving Magnet—registers the revolutions,.....8 00 to 12 00
1106. Axial Engine—this is upon the principle of force obtained from the electric current, and is the power employed on Prof. Page's Engine, at Washington—it requires a strong battery,15 00 to 18 00
1107. Barlow's Spur Wheel,.....5 00 to 8 00
1108. Apparatus for showing the Suspension of an Iron Bar by Propulsion; explains the principle of the Axial Engine,4 00
1109. Electro Magnetic Locomotive and Car, with Railroad. The battery is connected to the rails, and not carried in the car,.....35 00.
1110. Revolving Coil,6 00
1111. Revolving Electro Magnet,.....5 00

Telegraph Apparatus.



1112

- 1112.** Telegraph Working Model, for schools or families,5 00
1113. “ “ “ with Clock Work, and of
 sufficient size to be of some use,35 00



1114

- 1114.** Signal Key, for operating the Telegraph,1 25 and 2 50
1115. Copper Wire—bound, per yard,7 cts. to 10

*. These Models of Telegraphs require the Telegraph Model, the Key, Copper Wire and a Battery to make them complete; thus, No. 1112 will cost, when complete for use, as follows:—

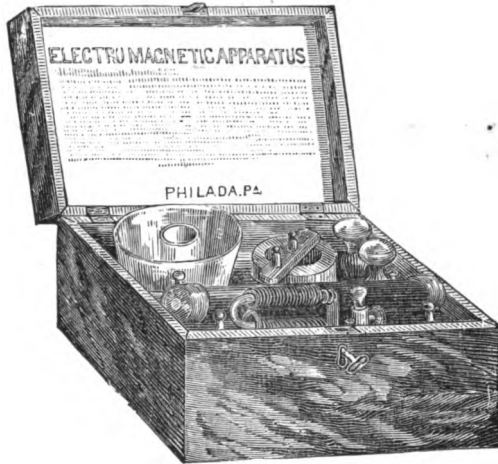
Model, No. 1112,	\$5 00
Key, No. 1114,	1 25
Battery, No. 1066, with extra porous cups,	4 25
Copper Wire, 10 yds,	1 00

\$11 50

APPARATUS FOR MEDICAL PURPOSES, ETC. 79

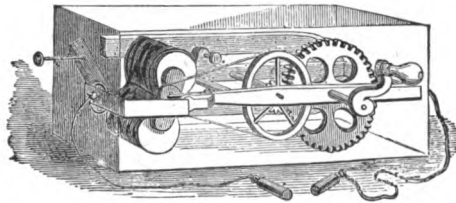
Apparatus for Medical Purposes, Shocks, etc.

1116. Silver Plated Handles, per pair,2 00
 1117. Sponge Handle,75 cts. to 1 00
 1118. Galvanic Slipper,75



1119

1119. Galvanic Battery and Electro-Magnetic Machine in Box, for nervous diseases, shocks, &c., with printed instructions,10 00, 12 00 and 14 00




1120

1120. Magneto-Electric Machine for medical purposes, without the use of acid or Battery,10 00

*. In this machine the power is produced by a coil of wire revolving near a magnet, by a crank turned by hand: it requires no acid, and is always ready for use, but is not so powerful as those at the same price with a Battery.

80 DESCRIPTION OF GALVANIC BATTERIES.

- 1121 Magneto-Electric Machine, same principle as No. 1120, but very much more powerful—has two magnets, and is arranged for shocks—sparks, and decomposition of water—a superior instrument,.....75 00

 We can also furnish most of the articles mentioned in *Davis's Manual of Magnetism.*

Description of the various forms of Galvanic Batteries.

Galvanic Batteries consist, essentially, of two metals, separated from each other and immersed in some dilute acid, which will act on one of the metals, but not on the other. The electric current is conducted by wires fastened to each of the metals. The metals commonly used are copper and zinc, and the acid, the sulphuric (oil of vitriol.) This is the earliest form of battery, but is soon exhausted, and requires constant cleaning.

Another battery consists of a cup of copper, containing a solution of sulphate of copper, (blue stone or blue vitriol.) A piece of zinc is put into it and the electricity carried by wires fastened to the cup and to the zinc. This forms an energetic battery for a short time, but a black deposit is soon formed on the zinc, and the action gradually ceases. It is very troublesome to clean.

Another battery may be formed with a copper cup containing a solution of sulphate of copper, into which is put an unglazed porcelain cup, containing a dilute acid, (sulphuric.) Into this porous cup and acid is placed a rod of zinc, covered with mercury, (amalgamated.) The porous cup allows the fluids to come in contact with each other and to transmit the electricity, but prevents any thing passing through to form a deposit. Hence the action is constant, and its energy sustained as long as the zinc lasts and enough of the sulphate is kept in the solution. From its inventor, it is called DANIEL'S CONSTANT OR SUSTAINING BATTERY.

Another kind of battery is formed of a plate of silver with a deposit of platina upon it, and a plate of amalgamated zinc. These plates are immersed in dilute sulphuric acid, contained in a glass vessel. The zinc may be in the form of a cylinder, and a platina plate substituted for the platinized silver plate. This is a neat, cleanly, and constant battery, and is much preferred for electrotyping, gold and silver plating, &c. From the name of the inventor it is called SMEE'S BATTERY.

CHESTER'S PATENT BATTERY is very clean, and we have used one for some months with much satisfaction for operating Telegraph Models and Machines. It consists of five tall glass jars, placed side by side; over the whole extends a rod of wood, from which

a plate of platina and a plate of zinc drop into each jar—each platina being connected with the zinc of the next jar. The acid used is sulphuric, diluted in the proportion of 1 part acid to 11 parts water. It is sold in sets of five jars—which give sufficient power for most purposes;—where it is desired to have greater power, several sets can be united together. Five sets are used at the Girard House in this city, to operate their Telegraph Annunciator.

Another battery is made by putting a cylinder of amalgamated zinc, in diluted sulphuric acid, contained in a glass vessel. Within this zinc cylinder a porous cup, containing strong nitric acid, is placed. A strip of platina is immersed in the nitric acid. The whole constitutes a very powerful battery, but is objectionable on account of the nitrous fumes given off, which are injurious to the lungs and to surrounding furniture, instruments, &c. It is called Groves' NITRIC ACID BATTERY, and is used in telegraphing.

If a large pair of plates of copper and zinc be formed into a battery, a great *quantity* of electricity would be evolved, and great heating and melting effects would be produced, but it could not send a current of electricity far through a wire. But if the same pair of plates be cut up into many smaller pairs, and put into as many cups, with the exciting fluid, and the zinc of one cup be connected with the copper of the next cup, and so on through the series, the electricity would be found to have an *intensity* of energy which would drive it through a very great length of wire. In the one case there is great *quantity*, in the other great *intensity*. Groves' Battery combines the two principles to a greater extent than any other form of battery, and hence is best adapted to telegraphing.

The price of batteries depends on their size, and may be combined to produce any effects desired. Smee's, considering the effects it produces with a given amount of material, is thought to be the cheapest kind of galvanic battery.

Chemistry.

1125.	Bell Glass Receivers, for collecting gases,	25 cts. to 1 00
1126.	“ “ stoppered,	87 cts. to 1 25
1127.	Blow Pipes, Brass, common,	25
1128.	“ “ with bulb,	50
1129.	“ “ ivory mouth piece and platina point, 2 50	
1130.	Bologna Cups of unannealed glass—can be broken by a small piece of flint, but resist a hard blow—per dozen, 1 25	
1131.	Crucibles, Sand, 5 in a nest—per nest,	10
1132.	“ Porcelain, with covers,	10 cts. to 50
1133.	“ Platina—per grain, .....	.03
1134.	Evaporating Dishes, Glass, 5 in a nest—per nest,	2 00
1135.	“ “ Porcelain,	25 cts. to 3 00

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CHEMISTRY.

1136.	Florence Flasks,	10
1137.	Funnels, Glass,	25 cts. to 50
1138.	Furnace, Portable Chemical,	12 00 to 25 00
1139.	Graduated Measures,	37 cts. to 1 50
1140.	Hydrogen Gas Generator, of Glass, suitable for making a small quantity,	4 00
1141.	“ “ of Copper, 9 in. high, 6 in. diam., 6 00	
1142.	Hydrogen Balloons,	1 00 to 4 00
1143.	Matrasses,	25 cts. to 75
1144.	Mortars, Iron,	50 cts. to 2 00
1145.	“ Wedgewood,	50 cts. to 3 00
1146.	“ Agate, 2½ inches diameter,	4 00
1147.	Platina Wire—per grain,	03
1148.	“ Foil, “ “	03
1149.	Pneumatic Trough, of Japanned Tin, with 2 three gal- lon Gasometers and Compound Blow Pipe,	15 00
1150.	Pneumatic Trough, same as No. 1149, made of Copper, 30 00	
1151.	Retorts, Glass, plain,	pint 37 cts., qt. 50, 2 qt. 75
1152.	“ “ tubulated,	pint 50 cts., qt. 62, 2 qt. 88
1153.	Receivers, stoppered,	pint 50 cts., qt. 62, 2 qt. 88
1154.	Retorts, Iron, for making Oxygen, &c.—iron tube to screw into the top,	1 50
1155.	Retort, Iron, for making Oxygen, &c.—open top, gallowa screw, 3 feet of lead tube,	3 50 and 5 00
1156.	Retort, Iron, same as No. 1155, with Glass Purifying Bottle,	7 50
*• Nos. 1155 and 1156, can be easily cleaned, as the entire top comes off.		
1157.	Retort Stands, Iron, with three rings,	1 50
1158.	Rods, Glass, assorted—per dozen,	50
1159.	Rupert's Drops, “	25
1160.	Spirit Lamps, Glass, with glass cover,	37 cts. and 50
1161.	“ Tin, Mitchell's,	75
1162.	Syphons, Glass, plain,	25
1163.	“ “ with mouth tube,	50
1164.	Test Glasses—per dozen,	1 25
1165.	Test Tubes, with foot—per dozen,	75 and 1 00
1166.	Test Papers, “	50
1167.	Tubes, Glass—per foot,	10 cts. to 25
1168.	“ India Rubber—per foot,	25
1169.	“ Lead, small, “	10
1170.	Woulfe's Bottles, with 3 necks,	50 cts. to 1 00

 Chemicals furnished at Market Prices.

Books.


- | | Prepaid
Price. Postage. |
|--|----------------------------|
| 1 Practical Treatise on the Use of the Microscope, including the different methods of preparing and examining Animal, Vegetable and Mineral Structures. By John Quekett, Assistant Conservator of the Museum, and Demonstrator of Minute Anatomy at the Royal College of Surgeons. Illustrated with 12 plates, and 270 wood engravings. London, 515 pages, | 5 00...36 cts. |
| The Construction and Use of the Microscope. By Adolph Hannover, M. D., Lecturer on Anatomy in the University of Copenhagen. With engravings. Edinburgh. 100 pages, | 1 50...12 " |
| The Microscopist; or, a complete Manual on the Use of the Microscope, for Physicians, Students, and all Lovers of Natural Science. With illustrations. By Rev Joseph H. Wythes, M. D. 212 pages, | 1 25...12 " |
| Curiosities of the Microscope; or, Illustrations of the Minute Parts of Creation; adapted to the capacity of the Young. With coloured illustrations. By Rev. Joseph H. Wythes, M. D. 132 pages, | 1 00...09 " |
| The Telescope and Microscope. By Rev. Thomas Dick, LL.D. 192 pages, | 0 38...06 " |
| A Treatise on Mathematica. Instruments; including most of the Instruments employed in Drawing, for assisting the Vision, in Surveying and Levelling, in Practical Astronomy, and for Measuring the Angles of Crystals; in which their construction, and the methods of testing, adjusting, and using them, are concisely explained. With numerous engravings. By J. F. Heather, M. A., of the Royal Military Academy, Woolwich. London. 170 pages, | 0 38...06 " |
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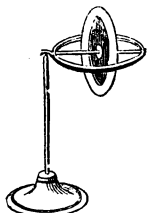
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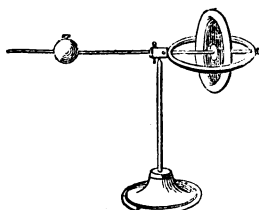
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